




BERMUDA: ITS HISTORY, GEOLOGY, CLIMATE,
PRODUCTS, AGRICULTURE, COMMERCE, AND
GOVERNMENT ; FROM THE EARLIEST PERIOD TO
THE PRESENT TIME ; WITH HINTS TO INVALIDS

THEODORE L. GODET



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Climate, Products, Agriculture,
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To Invalids

Theodore L. Godet

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B E R M U D A :

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AGRICULTURE, COMMERCE, AND
GOVERNMENT,

FROM THE EARLIEST PERIOD TO THE PRESENT TIME;

WITH

HINTS TO INVALIDS.

BY

THEODORE L. GODET, M.D.

LONDON:

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DEDICATION.

*To his Excellency Colonel FREEMAN MURRAY, Governor and
Commander-in-Chief, &c. &c., of Bermuda, or Somers'
Islands.*

SIR,—It is with the highest gratification that I avail myself of your kind permission to dedicate this volume to your Excellency—not only as a memento of my personal esteem, but from a conviction that no one can more appreciate any efforts in behalf of this Colony than your Excellency, who has the power of rendering them available.

I have had the pleasure of finding myself encouraged in the publication of this work by numerous subscribers; but to your Excellency I am indebted for many additions to the names that adorn the list.

I have the honour to subscribe myself, with every sentiment of gratitude and respect,

Your Excellency's

Very obliged and humble servant,

T. L. GODET.

Hamilton, Bermuda, 1860.

THE HISTORY OF THE

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PREFACE.

THE aim of this volume is to give an historical account of the origin and progress of the settlement made by emigrants from England in Bermuda, or Somers' Islands, and of the constitutional establishment, internal government, and political system maintained by Great Britain in these Islands. I have also endeavoured to describe the manners and dispositions of the present inhabitants, as influenced by climate, situation, and other local causes; and have offered some observations on the character and genius of the coloured race in this colony.

In these pages will be found a more comprehensive account than has hitherto appeared of the agriculture of these Islands in general, and of their staple commodities, and the various branches of the com-

merce of Bermuda; pointing out the relations of each towards the other.

On the subject of the character of the coloured inhabitants so much has been said of late by others, that it may be supposed there remains but little to be added by me; it is certain, however, that my views of the character and genius of the coloured inhabitants differ very essentially from the representations that have lately been given in a variety of publications.

From having resided many years in Bermuda—of which place I am a native—I presume to think that I am somewhat better qualified to judge of the influence of climate and situation on the disposition, temper, and intellect of the inhabitants, than some of those writers who have not had the same advantages.

The precarious position of our commerce, and the agitated and morbid condition of our white and coloured population, sufficiently attest the importance of a correct knowledge of the relative circumstances of the two races that compose the people of Bermuda.

I do not attempt to conceal from myself the direct bearing of the observations I have made on the Colonial Government of these islands; for I feel the full responsibility which, under the circumstances of the times, devolves on any one who adventures on "the dangerous precipice of telling unbiassed truth," regardless of the prepossessions of party, or the prejudice of class interests.

Having no personal interest with which that of the community of Bermuda is not identical, I have sought to benefit the colony by a full and fearless development of the truth. In so doing, I feel that I am acting in accordance with the spirit which animates the able representative of her Most Gracious Majesty, and humbly aiding in promoting the interests of Bermuda, and those of Great Britain, so far as the colony is concerned.

T. L. GODET.

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HISTORY.

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IN searching into the scanty records of the voyages of Columbus, we find no evidence of his having visited Bermuda in his extraordinary mission to the New World, and in his eager and absorbing anxiety for the final discovery of *Cathay*—that region of gold, pearls, and diamonds, which was to enrich every hardy adventurer.

But I think the reader will perceive, after perusing this work, that although we find neither

gold, pearls, nor diamonds in this modern Cathay, yet, nevertheless, there are other gems of equal value in its *climate, soil, and fisheries.*

In tracing the general history of this ancient and important settlement, the object which has chiefly prompted the author, is to develop its resources, to assist its commerce, to make it better known, as it deserves to be, in the Old World.

In the new highway of nations speedily to be opened up across that part of the Isthmus of Central America, having for its points of arrival and departure the harbour of Puerto Cabellos in the Gulf of Honduras, on the Atlantic side, and the capacious and beautiful bay of Fonseca on the Pacific side, Bermuda will derive a share of the abundant benefits which will accrue to all parts of the world from the new route of travel, as we think can be easily made apparent.

A fleet of steamships will regularly cross the Atlantic between England and Honduras, and Bermuda occupies a remarkable position as the place for a "house of call" for the passenger-ships travelling over this desirable line. A stock of coals for seven days' steaming would be all that these packets would require on leaving Honduras; and, if in good trim, and having the Gulf

stream in their favour, they would invariably make a rapid run to Bermuda. Here, with one-third of their passage already accomplished, they could replenish their fuel for the remainder of the homeward trip, reaching England within eighteen days from the time of quitting the shores of Central America.

But the importance of establishing very speedily a steam communication with Great Britain is becoming every day more obvious. As we may fairly conjecture that steam is to supersede sailing vessels for war purposes, and as it is not probable that the Americans will always continue at peace with us, it becomes necessary, in order to protect our colonies and their commerce, that we should have a more rapid and steady communication with Halifax and the West Indies—since Bermuda, conjointly with Halifax, holds in check the whole Atlantic coast of the United States, upon which nature has bestowed no equivalent for naval purposes, and also controls the West Indies, the Gulf of Mexico, and the south coasts of the United States. Since the extensive Government works at Bermuda have been undertaken, the island is found more convenient, in conjunction with Halifax, as the seat of naval power, as it greatly facilitates

the despatch of ships to the West India stations and the American Atlantic coast.

In 1522, when the discovery of insular America had become well known in the Old World, we find that Bermuda was first visited by Juan Bermudas, captain of a Spanish ship, *La Garza*, when on a voyage from Old Spain to Cuba with a cargo of hogs, and by that illustrious historian of the Indies, Gonzales Oviedo.

History informs us that the Spaniards' benevolent intention of leaving a few hogs, which might breed and be useful afterwards, was frustrated, on the eve of their debarking, by the springing up of a strong gale, which obliged them to steer off, and be contented with only a partial view, as they thought, of a single island.

Bermuda, sometimes called the "Bermudas," after the name of the individual who first saw them, is a cluster of small islands situated in the North Atlantic Ocean. That portion of the coast which looks to the east and to the south is in general shelving towards the sea, with a flat, shallow beach; while the western and northern shores rise almost perpendicularly from the ocean to a height of from twenty to thirty feet; and except in some of the small creeks, where steep sandy beaches occur, under

the rocky cliffs, the water is deep close to the shore. The south-eastern coast, to the extent of six or eight miles, exhibits a mixed character; the low land sinking very gradually under the sea, and the rugged and conical hills terminating, not in wall-like precipices, but sloping abruptly to a flat, extended beach.

Bermuda is encircled with coral reefs: many of them extending a considerable distance from the land; but the greater part of them lying under the surface of the water, at no great distance from the shore.

In 1543, Ferdinand Camelo took formal possession of Bermuda, and is stated to have cut his name on a rock still known as the "Spanish Rock," on the south side of the main island.

On the 7th December, 1593, Barbotière, a French captain, was shipwrecked here, and with twenty-six, out of fifty composing the crew, escaped to the shore; among them was Henry May, an Englishman, who afterwards published an account of the shipwreck.

Again, it was not until after an English vessel was wrecked here, being one of an expedition consisting of nine ships and five hundred men, on their way to Virginia, and the capabilities of Bermuda were examined into, that these islands excited any attention in Europe.

The expedition, after a favourable run to the Gulf of Bahama, encountered a severe hurricane. The vessels were each driven in a different direction, and the crew of the principal one, the *Sea Adventure*, with whom were Sir Thomas Gates, Admiral Sir George Somers, and Captain Newport,—the former to act as deputy governor under Lord Delaware,—were miraculously preserved from a watery grave, by the vessel being wedged between two rocks,* at the east end of Bermuda; and by means of a boat and skiff, the whole, to the number of one hundred and fifty men, with a great portion of the provisions and tackling, were landed.

With as little delay as possible after their sad disaster, the crew of the ill-fated vessel got in readiness and despatched the long-boat, with Raven the mate, and eight men, to Virginia, to bring shipping for their conveyance; but after eight months had elapsed, no tidings of the boat's crew arrived; and Sir George and his men built two cedar vessels, one of eighty tons, the *Deliverance*, and the other of thirty tons, the *Patience*. There was but one bolt of iron in Sir George's vessel, and that was in her keel. The seams of both vessels were closed up

* The shore is now called, from the name of the ship, Sea Adventure Flat.

with a mixture of lime and oil, for the purpose of making them water-tight.

In commemoration of the unfortunate shipwreck, Gates attached a wooden cross to a large cedar-tree, and placed a silver coin, together with an inscription on a copper plate, in the middle of it, which ran as follows:—"That the cross was the remains of a ship of three hundred tons, called the *Sea Adventure*, bound, with eight more, to Virginia. That she contained two knights,—Sir Thomas Gates, Governor of the Colony, and Sir George Summers, Admiral of the Seas,—who, together with her captain, Christopher Newport, and one hundred and fifty marines and passengers besides, had got safe ashore, when she was lost, 28th July, 1609."

Gates and Somers left Bermuda for Virginia on the 10th May, 1610, in their little cedar vessels, having left two men behind; and they arrived at Jamestown on the 23rd May. Sir George, after remaining but a short time at Jamestown, left that place for Bermuda in company with Captain Argall, afterwards Governor of Virginia. They were driven northwards by contrary winds, near to Cape Cod, where they were enveloped in such dense fogs that their two vessels were separated, and Argall returned to his

station. Somers, whose name the islands then bore, though the original one of Bermuda has since prevailed, pushed steadily on, and arrived at Bermuda on the 19th June; but from age, and fatigue of the voyage, he survived only a short time; his body was embalmed; and the colonists, alarmed at the untimely fate of their energetic commander, disregarded his dying exhortation to use their utmost endeavours for the benefit of the plantations, and to return to Virginia, sailed for England with his remains, in the little vessel of thirty tons, and, shortly after their arrival, the embalmed body of their hero was buried in White Church, Dorsetshire. In a narrow enclosure, at the lower end of Government House Garden at St. George's, in the midst of weeds and rubbish, a mutilated slab, of a coarse description of stone, may be perceived, on which was engraved the following epitaph, composed to the memory of Sir George Somers, by Governor Nathaniel Butler:—

“IN THE YEAR 1611.

“Noble Sir George Summers went hence to Heaven,
Whose well-tried worth, that held him still imploud,
Gave him the knowledge of the world so wide;
Hence, 'twas by Heaven's decree, to this place
He brought new quests and name to mutual grace;
At last his soul and body being to part,
He here bequeathed his entrails and his heart.”

Attempts were now seriously made by England to colonize Bermuda, and on the 11th July, 1612, a vessel with sixty emigrants arrived, and was conducted into harbour by three men who had been left on the islands. They were attracted hither by the hope of finding ambergris.

The attention of England was now roused in favour of Bermuda by the report of Captain Matthew Somers, the nephew and heir of Sir George. Publicity was given to highly-coloured statements, and great exaggerations, in contrast with the dark ideas formerly prevalent. Jourdan remarks that "this prodigious and enchanted place, which had been shunned as a Scylla and Charybdis, and where no one had ever landed but against his will, was really the richest, healthfullest, and most pleasing land ever man set foot on." Strachy sums up his pithy remark by saying, that the Company "liked it very well."

The Virginia Company, after having bestirred themselves in representations to King James I., showing the vast importance and the proximity of Bermuda to his Majesty's "plantation" of Virginia, succeeded in procuring an extension of their charter, on the 12th March, 1612, to embrace Bermuda in their boundaries, for the purpose of trade with the

mother country and British America; and England was now actively engaged in fostering it. Shortly afterwards the islands were sold by that Company to one hundred and twenty gentlemen, who formed a company of their own, under the name and style of the Governor and Company of the City of London, for the "plantation" of the Somer Islands.

Amidst all this additional strength to its resources, Richard Moor was sent out as Governor for Bermuda. Governor Moor's administration was an active one; he laid the foundation of eight or nine forts, and had everything placed in readiness in case of hostilities or aggression. He removed the seat of government from Smith's Island to St. George's, and having built a cabin, which he thatched with palmetto leaves, as a residence, the rest of the colonists soon followed his example. He built, also, a church of cedar, which was in time destroyed by a tempest, and he afterwards directed another to be built of palmetto branches, in a place better sheltered from the weather.

Scarcity and want prevailed for two years, to an alarming extent, and the colony was covered with a veil of gloom and despondency, which was increased by a fatal sickness, of which many died. Some time after, the ship *Welcome* arrived with

stores, which afforded relief to the people. About this time the potato and tobacco were first cultivated. During Governor Moor's administration, the company employed Richard Norwood in dividing the island into tribes and shares, fifty shares being allotted to each tribe. Moor displeased the Company by opposing their projected division of the colony into shares, in which he insisted that neither his own interest nor that of the colonists was duly considered. This displeasure of the Company was followed by Moor's recall, and the ship *Welcome* took him home, leaving the administration in charge of six persons, who were to rule, each in turn, one month. Governor Moor was indefatigable in his exertions for the benefit of the colony. He was a man of ordinary condition, a carpenter by trade, but by his firmness, prudence, and popular manners, he soon silenced all impertinence, and shamed all attempts at opposition in England.

He was succeeded by Daniel Tucker, in May, 1616, when a very important era dawned upon the island, as a Court of General Assize was held at St. George in the second month of Tucker's administration, being the first real attempt to establish law and justice in the island.

This measure met with the usual opposition, and

a Frenchman was hanged for speaking "many distasteful and mutinous speeches against the Governor." * The discouraging and afflicting circumstances of the state of society at this period naturally required a remedy, and it was thought necessary by Tucker to make an example of the first culprit for the suppression of the mutiny.

Tucker appears to have been a most persevering and painstaking Governor, and although thoroughly initiated into the mysteries of his duties, yet in attempting to establish order among the boisterous colonists, and to correct the mutinous spirit which then existed among them, he appears to have adopted high-handed measures.

The island, however, underwent many convulsions, and society was in a wretched condition, owing to the constant animosity between the Governor and the settlers; the latter being still held more in check by the absurd policy of the Governor: the cruel discipline and severe labour which he exacted of them created great disgust, and excited many to attempt desperate means to escape from the island. Five persons succeeded in building a boat of three tons, under the pretence of its being for the use of the Governor; and previous to their departure for England, one of

* Smith's *History of Virginia*, &c., vol. ii. p. 137.

the party borrowed a compass of Hughes, for whom he left a very ludicrous note, recommending patience under the loss.* Three weeks after they sailed, they encountered a strong gale, but their little craft was fortunate in her contest with the winds and the waves, and after great privations the bold-hearted sailors arrived in Ireland; there their cruise was held to be so marvellous, that the Earl of Thomond ordered that they should be received and entertained, and their brave little bark hung up as a monument of the extraordinary voyage.† The Governor was highly enraged at their escape, and threatened to hang the whole if they returned.

Shortly after Governor Tucker's arrival he was successful in obtaining from the West Indies "Figgs, Pynes, an Indian, and a Negar." These were the first slaves brought to the islands; but slavery became very general as early as 1632.

The ship *Diana* arrived from Europe with a supply of stores and men, and, after remaining a few weeks, returned to England with 30,000 pounds of tobacco, which gave great satisfaction to the proprietors.

* Mr. Hughes had preached several sermons on patience about this time.

† Smith's *History of Virginia*, &c. vol. ii. p. 137, 138; Murray's *British America*, vol. ii. p. 155.

Great complaints of Tucker's cruelty were forwarded by this ship, and, to justify himself, he went home in December, 1628, leaving the government in charge of Captain Kendall.

The Company did not think fit to send him back, but appointed in his place Captain Nathaniel Butler, who sailed in July, 1619, and arrived in October, with four ships and 500 men: this doubled the number already in the colony. Butler gave great satisfaction, by modelling his administration on the principle of the Home Government.

We have seen that disputes, while as yet their numbers scarcely amounted to hundreds, composed the chief portion of the early history of the colonists. The first cultivators of the soil, being white labourers, were soon found unequal to the fatigues of agriculture in a warm climate, and it therefore became necessary to procure Africans. These, at the time of their first importation, were actually considered an intermediate race between man and monkey.

Such a doctrine, I believe, was really promulgated, for the purpose of removing somewhat of the disgust which had come to prevail against the traffic of buying and selling our fellow-creatures. There were at this time, and long afterwards, as is well

known, monsters in human shape, who sailed the seas, and made it their chief business to steal the helpless and unwary from the shores of England; whole villages were laid desolate, and the inhabitants carried off and sold in the colonies. No animal more savage than such men. But the curse of God was upon these pirates and man-stealers.

The colonists refused to purchase their Christian brethren, or to receive their fellow-creatures into slavery from these kidnappers; and hence it became necessary, as I suppose, for the traders to assert that the black African was only half human. The reader may smile at this assertion; but the subject was seriously discussed, both at home and in the colonies, and it was decided at one time that they were unworthy of baptism, and ought not to be allowed to enter where the word of God was preached.

The first General Assembly for the despatch of public business was held at St. George's, according to instructions from England, on the 1st August, 1620. The Assembly was composed of the Governor, council, bailiffs, burgesses, and a secretary, numbering thirty-two in all; and during the session fifteen Acts were passed, and approved by the proprietors in England. Butler divided the islands into parcels, which were soon peopled: for, in 1623,

there were above 300 English inhabitants. After that time the population was increased by blacks, who now form more than one-half of the entire population.

The colony continued to enjoy a high reputation, and at the period of civil commotion, along with Virginia, was the resort of distinguished emigrants. The islands gained additional lustre from the fact that Edmund Waller, the poet, chose them for the theme of his *Battel of the Summer Islands*, saying, in the most flattering strains,—

“ The kind spring which but salutes us here,
Inhabits there, and courts them all the year;
Ripe fruits and blossoms on the same trees live,
At once they promise what at once they give,—
So sweet the air, so moderate the clime,
None sickly lives, or dies before his time;
Heaven sure has kept this spot of earth uncurst,
To show how all things were created first!”

Waller was a member of the Long Parliament, and at first joined the party against the king; but afterwards entered into the conspiracy against the Parliament, for which Chaloner and Tompkins were executed. Waller, more fortunately, escaped by paying a fine of 10,000*l*. Having spent some time in the Bermudas, he proceeded to France, and on the elevation of Cromwell to the Protectorship, he returned to England.

The archives of the colony present nothing worthy of notice after the Civil Wars, when many sought a refuge from the tyranny of the ruling party in the distant sanctuary: tradition only handing down a succession of quarrels between the Governor and the people.

CHAPTER II.

CLIMATE.

Warmth of the Gulf Stream—The Island celebrated by the Bard of Erin—Effects of residence in Bermuda on persons predisposed to scrofula or pulmonary consumption—Effects of the Gulf Stream on the climate of Bermuda—The operations of the climate on agricultural produce—Seasons—Sailing directions between Bermuda and New York or the Chesapeake—Yellow fever—H. M.'s hulk *Thames*—The unhealthy character of the *Tenedos*—The medical board—Some account of the yellow fever of 1856—Its severity among the natives—Less fatal to Europeans—Hints to invalids from northern climates as to the preservation of health in Bermuda.

THE climate of the Bermuda islands has a mean temperature between that of the West Indies and British North America, partaking neither of the extreme heat of the one, nor the excessive cold of the other. It is greatly improved by the warmth of the Gulf Stream, which sweeps along between Bermuda and the American continent; the winter months resembling the early part of October in England, but without its frosts. The sweet strains

of the Bard of Erin have sounded the praises of the cedar-groves and wood-nymphs of the "Fairy Isles," as the Bermudas have been styled by Shakespeare—

"No: ne'er did the wave in its element steep
 An island of lovelier charms;
 It blooms in the giant embrace of the deep,
 Like Hebe in Hercules' arms;
 The blush of your bowers is light to the eye,
 And their melody balm to the ear;
 But the fiery planet of day is too nigh,
 And the Snow Spirit never comes here."

The official returns of deaths among the troops, and the prisoners, confined, as they are, to the unwholesome atmosphere of the hulks, prove the place to be remarkably healthy.

Bermuda is not so much subject to diseases as are the more northern climates. Epidemics are of unfrequent occurrence; and deaths from all causes, as shown by the statistical tables, amount to no more than 14·5 per cent. annually.

The climate of Bermuda would prove eminently eligible for those natives of cold countries who, from general delicacy of constitution, are unable to undergo active continuous labour with exposure, or who otherwise suffer from a cold and variable climate. As far as the author's observation goes, the effect of residence in Bermuda, on such persons, is usually bene-

ficial; especially on those who are predisposed to scrofula or pulmonary consumption, or who have evinced a peculiar tendency to colds and bronchial affections during the winter months. In such cases, the physical energies usually undergo a rapid and marked change, resulting in permanent good health. I believe that immigrants of this description, by observing common prudence in their mode of living, might, with perfect safety, and with every prospect of improved health, engage as farmers in the islands generally.

The effects of the Gulf Stream on the climate of Bermuda are very manifest. This powerful current, after rising under the tropic, and flowing from the Gulf of Mexico through the Straits of Bahama, runs in a north-easterly direction along the American coast, washing the Great Bank of Newfoundland, and, after flowing upwards of 3,000 miles, finally reaches the Azores, and even the Bay of Biscay. The temperature of the water of this current is 8° above that of the surrounding sea at the Great Bank, and 5° above the temperature of the sea at the Azores. Rennel estimates the dimensions of the current and the tract that receives it at 2,000 miles in length, and 350 in breadth. Both are marked by the seaweed, and are well known to mariners. By this

cauldron of warm water the icebergs from the north are dissolved; the surrounding waters and superincumbent atmosphere are warmed, and the temperature of the neighbouring continent elevated. A proper retreat is also afforded to the various kinds of fish after their season of spawning has passed, and while the severity of the frost drives them from the shores. Such are some of the leading operations perceived in the economy of nature in this part of the world.

The atmosphere brought over the land from the south-west, being loaded with vapour given off from the warm sea surface, is frequently charged with rain; and the condensation carried on by the cooler land surface along the coast in the spring produces fogs. The atmosphere over the interior lands soon acquires the temperature necessary to dispel these fogs; and therefore, while some of the shores are obscured by them, the inland districts enjoy a clear sky. From the proximity of Bermuda to the Mexican stream, it enjoys the improved climate thus produced in a higher degree than any of the British provinces.

The effects of the climate upon the agricultural produce are more favourable than in other countries under the same mean annual temperature. Besides many of the fruits of the temperate regions,

the heat of summer permits those of a tropical character to flourish; hence a greater variety may be produced than in any other part of the world. The season for vegetation is sufficiently extended to ripen a great many kinds of grain, vegetables, and fruit.

The most agreeable season at Bermuda is the winter, or cold season, which lasts from November to March; the mean temperature being 60° . The prevailing winds are then from the westward; but if from the north-west, fine, hard weather, with a clear sky, accompanies them, the thermometer varying from 50° to 56° . This weather often terminates in a very fine, bright day, with a very slight wind and partial calms;—afterwards the wind invariably changes to the south-west, and the weather becomes hazy, damp, and attended with heavy rains and gales; the thermometer rising to 66° and 70° .

These alternate north-westerly and south-westerly winds prevail during nine months of the year, the wind remaining at no other point for any length of time. The change is shown by a difference of 14° in the temperature.*

Spring commences at the end of February, and the weather usually continues mild, with refreshing

* *Vide* Appendix A.

showers of rain and gentle breezes from the south and west, until the end of May.

The summer begins in June, and the weather becomes hot. Calms about this time generally replace the gentle breezes of May; the atmosphere becomes sultry and oppressive, and long droughts are common, which are usually succeeded by severe thunder-storms.

The weather in September changes its character, and again becomes mild and agreeable.

It may not be unimportant to the general reader to give the following sailing directions between Bermuda and New York, or the Chesapeake : *—

“ The first half of a revolving gale is a fair wind from Bermuda to New York, because in it the wind blows from the east; but the last half is a fair wind from New York to Bermuda. During the winter season most of the gales which pass along the coast of North America being revolving gales, vessels from Bermuda, bound to New York, should put to sea when the north-west wind, which is the conclusion of a passing gale, is becoming moderate, and the barometer is rising to its usual level. The probability will be, more particularly in the winter season, that

* From the latest edition of Sir William Reid's work on the *Law of Storms*.

after a short calm, the next succeeding wind will be easterly, the first part of a fresh revolving wind coming up from the south-west quarter.

“A ship at Bermuda, bound to New York or the Chesapeake, might sail whilst the wind is still west and blowing hard, provided that the barometer indicates that this west wind is owing to a revolving gale, which will veer to northward. But as the usual track which gales follow in this hemisphere is northerly or north-easterly, such a ship should be steered to the southward. As the wind at west veers towards north-west and north, the vessel would come up, and at last make a course to the westward, ready to take advantage of the east wind at the setting in of the next revolving gale.

“A vessel at New York, and bound to Bermuda at the time when a revolving wind is passing along the North American coast, should not wait in port for the westerly wind, but sail as soon as the first portion of the gale has passed by, and the north-east wind is veering towards north—provided it should not blow too hard; for the north wind will veer to the westward, and become every hour fairer for Bermuda.”

Yellow Fever.—These islands, which are generally and properly allowed to be healthy, have only been

afflicted a seventh time since their settlement—a period of above two centuries—with yellow fever.

I happened to be employed on board H.M.'s hulk *Thames*, as acting assistant-surgeon, at the breaking out of the yellow fever at Boaz Island, early in September, 1856. I had charge of all the fever patients at that time on board the *Thames*; but notwithstanding the notoriously unhealthy character of that hulk, I was more fortunate with my patients in 1856 than the medical officers were even in that queen of hulks, the *Tenedos*, in 1853; less than half the number of deaths (in the same ratio) occurring in the *Thames* hulk. I must not omit to give due praise to the officers, and especially to the prisoners who acted as nurses after their own recovery from the yellow fever. Yet in spite of every exertion the fever raged fearfully, and after five weeks' hard work became so virulent, that the medical board deemed it prudent to have the *Thames* cleared out—which being accomplished, the sick prisoners were conveyed to Boaz Island, and placed under the medical charge of Doctors Beck and Warner.* At the same time I was placed in medical charge of the two prison-ships *Dromedary* and *Medway*—both containing nearly 1,000 prisoners. I merely

* Since dead.

state these facts to show how short the Council establishment was of medical officers, and how necessary it is, during an epidemic, to have sufficient medical aid.

The yellow fever which prevailed in 1856, and of which I am about to give some account, for the most part attacked the natives; persons from Europe, and more particularly seamen and soldiers, were not entirely exempt, but to them it rarely proved fatal.

This fever was ushered in by the same sensations which precede other fevers—such as lassitude, stiffness, and pain of the back, loins, and extremities—and was generally accompanied by some degree of coldness. These symptoms were soon succeeded by a severe pain in the head; a sense of fulness of the eyeballs; intolerance of light; dry skin, which imparted a burning heat to the hand; full and quick pulse; tongue covered with a whitish mucus, but often not materially altered from the state of health. I may here remark that the actual degree of heat, as indicated by the thermometer, was not in proportion to the intensity communicated to the touch. It generally varied between 97° and 100° , very seldom exceeded 102° ; yet the skin imparted a burning, caustic sensation to the hand at these times.

If the patient had been attacked in the night,

he awoke with oppressive heat. Headache and other symptoms of the fever were ushered in by an instant loss of muscular power and immediate depression of nervous energy. The patient fell down as if he were stunned by a blow, his eyes swimming in tears. In those cases delirium was an early symptom. In a few hours the pain of the loins increased, and in aggravated cases stretched forward towards the umbilicus; the countenance was flushed; the white of the eye was as if finely injected by blood-vessels; the albuginea appearing, through the interstices of the network of vessels, of a peculiar shining cartilaginous whiteness.

During the first twelve hours, the patient was not particularly restless, enjoyed some sleep, and when covered by the bedclothes had partial perspirations on his face, neck, and breast.

About the end of this period there was a great exacerbation of the fever; the patient became restless; the heat and dryness of the skin increased; there was much pain of the eyes and frontal sinuses; the pain of the thighs and legs was augmented; thirst was increased, with a sensation of pressure about the region of the stomach. Nausea and vomiting occurred towards the end of the first twenty-four hours. If the fever was not checked within thirty-

six hours from its commencement, the patient was in imminent danger, and all the symptoms were aggravated; the pulse became strong and full, and pulsation of the carotids appeared distinct on each side of the neck. The skin continued hot and dry; the thirst was increased; there was much anxiety, the patient continually shifting his posture; all his uneasiness was referred to his head and loins. A sensation of pain was felt about the umbilicus when pressed upon; the white of the eye now appeared of a dirty concentrated yellow colour, and apparently thickened, so as to form a ring round the margin of the cornea. The blood-vessels of the eye appeared more enlarged and tortuous; the knees drawn up to the abdomen; frequent vomiting; mucus and the common drink only being ejected. Delirium came on about the end of the second day.

There was now a dryness, or slight sensation of soreness of the throat when swallowing; and, about this time, an urgent sensation of hunger frequently came on, and a remarkable want of power in the lower extremities, resembling partial paralysis of the limbs. About this time, also, the pain of the loins was so severe that the patient expressed himself as if his "back was broken."

The third day, or stage, began by apparent

amelioration of the bad symptoms, the vomiting and thirst excepted. The matter ejected had small, membranous-looking flocculi floating in it, resembling the crust washed from a port-wine bottle. The thirst was urgent, and there was an incipient demand for cold water, which was almost immediately rejected by the stomach. The heat of the skin was reduced; the pulse sank to, or below, its natural standard; the patient, for an hour or two, expressed himself to be greatly relieved, and, at this time, a person unacquainted with the nature of the disease would have hopes of his recovery. This state, however, was of short duration, and the delusion soon vanished. The delirium increased; the matter ejected from the stomach became black as coffee-dregs, and was somewhat viscid. There was an acrid, burning sensation of the stomach, and soreness of the throat, extending along the whole course of the œsophagus, in attempting to swallow; eyes as if suffused with blood; skin, a dirty yellow; parts round the neck, and places pressed upon in bed, of a livid colour; more or less hæmorrhage took place from the nose and mouth. The delirium became violent; the body as it were writhed with pain; the knees incessantly drawn up to the body. The patient, with convulsive grasp, seized his bed, or anything

within his reach, and preferred the hard floor to his bed. The pulse now sinks; respiration becomes laborious; the countenance collapsed; the lustre of the eye gone. For some hours, he lies in a state of insensibility before death; at other times, expires after some convulsive exertion, or ineffectual effort to vomit. The tongue is sometimes but little altered during the course of the fever; and if loaded in the early stages, it often became clean and of a vivid red before death.

Such was the regular succession of symptoms which characterized this fever, but of longer or shorter duration, according to the violence of the disease, or strength of the powers of life to resist it.

In weakly habits, the vascular action at the beginning was less marked; and in these cases, the fever was generally more protracted, and the patient expired unaffected by the laborious respiration and convulsive motions which attended the last struggles of life in the more violent degrees of the fever. Very often the patient retained his senses till within a few minutes of his death, and sometimes would predict, with considerable precision, the hour of his dissolution.

In the early stages of the worst cases, there was much anxiety in the countenance of the patient,

who expressed a despair of recovery. This fear did not seem to arise from any natural timidity, but seemed rather a symptom of the disease. In the last stage, there was as much resignation to his fate as there was apprehension at the beginning.

Not a few of those attacked by this fever, if proper remedies to subdue it had been employed, recovered from its first stage. They exhibited sure symptoms of improvement within the first twenty-four, or, at farthest, thirty-six hours, from its first attack.

Very many recovered from the second stage—that is to say, before black-vomiting commenced; but only a few recovered from the last stage.

In the former cases, the stomach gradually became retentive; the eyes and skin became of a more vivid yellow. They had refreshing sleep, but continued extremely weak and languid for a long time. The oozing of blood from the fauces and gums also continued for some days.

Pain of the back, early stretching round to the navel, soreness in the throat and œsophagus, heat and acrid sensation in the stomach, urgent thirst, hunger, want of power, resembling paralysis of the limbs, violent delirium, despondency, enlargement of the blood-vessels, and a red-yellow colour of the

white of the eye, either singly or collectively, indicated extreme danger ; and when the black vomit had appeared, scarcely a hope remained.

The peculiar habit favourable to the morbid motions which constitute this fever, is excited into action by a variety of causes ; the chief are—intemperance, excessive fatigue in the sun, perspiration checked by being exposed to a current of air, or sleeping exposed to the dews, &c. In fact, whatever becomes an exciting cause of fever in any country is equally so in this ; but, unfortunately, it is not the same fever that is induced. Contagion, as the chief source of this fever, is entirely rejected by those professional men who have had the greatest opportunity of information.

Some hints to invalids from Northern climates, for the preservation of health in Bermuda, may here be given with advantage.

Dress.—The necessity which tyrant custom—perhaps policy—has imposed on us, of continuing to appear in European dress on almost all public occasions, and in all formal parties, under a burning sky, is not one of the least miseries of a tropical life ; but, fortunately for Europeans, there is some intermission of solar heat in Bermuda ; we are roasted only three months in the year ; whereas, in the West

Indies, the burning heat never ceases all the year round. It is true that the custom of European dress is often waived in the more social circles that gather round the tea-table, where the light, cool and elegant vestures of the East supersede the cumbrous garb of Northern climates.

It "were a consummation devoutly to be wished," though, I fear, little to be expected, that the European badges of distinction, in exterior decoration, could be dispensed with at all festivals, public and private, formal, social, or domestic, in warm latitudes. It requires but the most superficial glance to perceive that coolness during our repasts is salutary, as well as comfortable; and that, from the extensive sympathies existing between the skin and several important organs, particularly the stomach and liver, the converse of the position is equally true; especially as, in the latter case, we are led a little too much to the use of "gently stimulating liquids" to support the discharge.

The newly arrived European justly observes that he finds himself drenched with perspiration three or four times a day, in which state he cannot remain with either safety or comfort. Certainly, it would be useless to point out the evil without suggesting the remedy; and, happily, it may be obviated, to

a considerable extent, in a very simple and easy manner. It must be recollected, that the temperature of the atmosphere, *sub dio*, in the summer season, exceeds that of the blood by many degrees; therefore, cotton, from its slowness as a conductor of heat, is admirably adapted for the hot season, and cooler than linen, inasmuch as it conducts more slowly the excess of external heat to our bodies. Cotton, also, abstracts more slowly the heat from our bodies, and thus preserves a more steady equilibrium there, when a *vicissitudo* takes place, and the atmospherical temperature sinks suddenly far below that of the body. To these must be added the facility with which cotton absorbs the perspiration: while linen would feel quite wet, and if exposed to a breeze, under such circumstances, would often occasion a shiver, which might be followed by dangerous consequences.

Flannel, on the contrary, is superior to cotton in the cooler months, and is adopted by many experienced and seasoned Europeans.

To guard against *coup de soleil*, a light palmetto hat, covered with white cotton, should be worn when exposed to the sun, between the hours of ten and four in the day.

Food.—That vegetable food; generally speaking,

is better adapted to a warm climate than animal, I think we may admit; and particularly among unseasoned Europeans, as it is not so apt to induce plethora.

The newly-arrived European invalid should content himself with plain breakfasts of bread-and-butter, with tea or coffee; and avoid indulging in meat, fish, eggs, or buttered toast.

In regard to dinner, Europeans appear to study convenience rather than health, by deferring that meal till after sunset. The gorgeous table, the savoury viands, the stimulating wines of the evening feast, prolonged by the fascination of social converse, greatly exacerbate the nocturnal paroxysm of fever imposed on us by the hand of nature, and break with feverish dreams the hours which should be dedicated to repose.

The consequences resulting from this are quite obvious. It may be observed that the natives themselves usually make their principal meal soon after four o'clock, when the heat is less distressing, and insects neither so numerous nor teasing, as they generally are in the summer months; but during winter we are freer from these little pests and all the disagreeableness accompanying hot weather.

He, then, who consults his health in Bermuda, or

in the tropics, will beware of indulging in the evening feast, particularly during the period of his probation, but will rather be satisfied with the early dinner, when tea or coffee, at six or seven o'clock in the evening, will be found a grateful refreshment. After this, his rest will be as natural and refreshing as can be expected in such a climate, and he will rise next morning with infinitely more vigour than if he had crowned a sumptuous dinner with a bottle of wine the preceding evening.

We think it unnecessary to speak of supper, as it is a mere matter of ceremony in warm climates, excepting after assemblies, or on some public occasions.

A moderate indulgence in fruit during the first year is prudent. Good ripe oranges are very grateful in hot weather, from their subacid and cooling juice; also lemonade, to allay the unpleasant sensation of thirst. Plantains and bananas are wholesome and nutritious, especially when frittered.

Drink.—The new-comer should never exceed one or two glasses of wine after dinner, or, on any account, admit it to his lips between meals, unless in cases where excessive fatigue and thirst render drink indispensable, when cold water alone might be injurious.

It should be borne in mind, that when a course of temperance is fully entered on, no consideration should induce us to commit an occasional debauch, especially during our seasoning; for we are at those times in infinitely greater danger of endemic attacks, than the habitual bacchanal.

Exercise.—The principal object and effect of exercise appear to consist in keeping up a proper balance in the circulation, in supporting the functions of the skin, and promoting the various secretions.

It will doubtless appear strange to the general reader, that by observing strict temperance in eating and drinking, with regular habits, the European can with safety enjoy his customary exercises in Bermuda, and far excel the native white or black in laborious exercise, even under a burning sun.

We have a remarkable instance of that superiority in the case of European convict labour on the public works in Ireland Island, which is pretty well tested; strict temperance being one of the standing rules of the convict establishment, and carried out as far as practicable in the treatment of the convicts at Bermuda. Therefore, when we hear Europeans talk of the climate being so debilitating, we must attribute the debility to irregular habits and intemperance in eating or drinking; as, certain

secretions (the biliary, for instance), perspiration, &c. being already in excess—which excess very soon leads to debility and diminished action in the functions alluded to, with a corresponding want of equilibrium in the blood—it becomes necessary to counteract these by active exercise in the winter, and exercise of a more passive kind in the summer, such as the climate will admit of, and at particular periods of the day. This distinction must be carefully guarded if we mean to preserve our health.

Bathing.—To moderate the action of atmospheric heat, nature, or instinct itself, points out the external application of cold water to the body. The cold bath not only counteracts the influence of heat by suspending its operation for the time, but it safely inures us to the sudden access of cold, the fruitful source of so many disorders. By keeping the skin clean, cool, and soft, it moderates excessive, and supports natural and equable cuticular discharge; and from the *cutaneo-hepatic sympathy*, so often noticed, the functions of the liver partake of this salutary equilibrium—a circumstance hitherto overlooked.

It is, however, imprudent to bathe while the process of digestion is going on in the stomach, as it disturbs that important operation. Where visceral

derangements of any extent, particularly in the liver, have taken place, the cold bath must be hazardous, from the sudden afflux of blood directed from the surface to the interior, and also on account of the subsequent vascular reaction. Another and less hazardous form of using cold water is by the application of a wet sponge to the surface of the body, followed by friction with a coarse napkin. The last resort—the tepid bath—if care be taken to avoid a chill afterwards, will, in these cases, be substituted with great advantage.

Sleep.—The hour of retirement to repose should never be protracted beyond ten o'clock; and at daylight we should start from our couch to enjoy the cool, fragrant, and salubrious breath of morning. Early hours are here indispensable. The fashionable dissipation of Europe would soon cut the thread of our existence in these regions; but the order of nature is never inverted with impunity, even in the most temperate climates.

CHAPTER III.

GOVERNMENT.

Medical Practitioners—Government—Practical Republics—The colonies of a free State—The Spanish possessions in America—The evils and absurdities of the Constitution of Bermuda—Party spirit—Private relations of life—A Tory and a Radical—Families of different parties—The public spirit extinguished—Tyranny of a majority—Reform—Vice-regal government, with a Council of Advice—Bitterness of party spirit in the House of Assembly—Insult to the Representative of the Sovereign.

THE climate being so healthy, a stranger might naturally suppose that there would be very few of the medical faculty in Bermuda; nevertheless, the island is overstocked with M.D.'s—the young men finding the United States so easy of access, the expenses so trifling, and the good people of Bermuda so easily satisfied with anything approaching to the degree of doctor—in fact, anything in the shape of an American diploma is sufficient to entitle any one to practise in the medical profession.

Most of the medical practitioners in Bermuda are able, intelligent, and well-educated men; but still, any man who has a diploma from an American college or university—or whether he has a diploma or not—may commence practice as a *doctor*, without being called upon to exhibit any proofs of his knowledge or experience. The profession ought to be better regulated; and in a community now so rapidly increasing, and where men of learning and talent abound, some arrangement should be made to prevent the mischief which ignorance and impudence are calculated to produce in a population not yet sufficiently enlightened to distinguish the true physician from the false pretender. I doubt not that the present Governor of the colony is fully disposed to support any measures which the faculty themselves may suggest for the better ordering of their department; and I do hope and trust that the leading men of the profession will take the matter into their serious consideration, and agree upon an ordinance to be passed by the Governor and Council, for regulating the practice of physic and surgery.

As to the form of government, Bermuda, and most of the West Indian colonies, appear externally to be governed on the model of England; but in reality they only possess in a small degree the

genuine spirit of the mother country. They are practical republics, and present as faithful a picture of the petty states of old Greece as the change of manners and religion will allow. There is the same equality amongst them, the same undue conception of their own importance, the same irritability of temper, which has ever been the characteristic curse of all little commonwealths.

The forms, indeed, of the English Parliament are too gigantic for the capacities of little islands; the colonists are not elevated by the size, but lost in the folds of the mighty robe, which was never destined for their use.

The colonies of a free State are more embarrassing problems of government than those of a country where the monarch is absolute. The Spanish possessions in America were twenty times as large as Old Spain; yet for three centuries they were regulated by a European council, which, with the exception of its errors in commerce, and prejudices concerning race and rank, governed them well, and ultimately effected the introduction of those humanizing decrees which have justly raised the name of the Spanish colonists over those of any other nation.

A different relation, however, arises between a free nation and its distant settlements; the colonists

carry their freedom with them, and claim a right to the same or similar privileges that exist within the pale of the mother country. A thousand Englishmen leave England and settle on an island in another hemisphere. How shall they be governed? Not by the Queen alone—for the Queen of England is no despot; not by Parliament—for they are not represented in Parliament. Therefore the spirit of the Constitution is obliged to grant to them and their heirs the forms of the Constitution; and they must govern themselves, accordingly, like the rest of their fellow-subjects, with the consent of the common Executive. If, then, they have a charter, or a right without a charter, to be governed in this manner, where is there room for the Parliament of another part of the empire—in which their property does not lie, where they themselves do not reside, wherein they are neither actually nor virtually represented—to legislate absolutely for them? They insist that they have a right to be governed by those only who, according to the provisions of the Constitution, represent them—that they are not represented actually in the British Parliament, because they depute no member to that assembly—and that they are not represented virtually in the British Parliament, for the best of all reasons, that they are

actually represented elsewhere. So slow is the march of opinion in Bermuda, that the political constitution which pleased the islanders two centuries ago, pleases them still; and as regards the mass of the people, there is yet no dawn of that crisis, which must ever arrive where intellect advances and political institutions stand still.

I shall now briefly state what is the Constitution of Bermuda, in the hope that by making its evils and absurdities generally known, a step may be made towards its amendment.

The Legislature consists of three branches—the Governor, who is the Queen's representative; the Legislative Council, consisting of a limited number, appointed by the Queen; and the General Assembly, consisting of thirty-six members, elected by the people. The members of the Assembly and Council are each paid eight shillings sterling per diem when on duty; this sum is voted annually, and entails on the colony a considerable expense.

The three branches of the Legislature enact laws in a way similar to the Queen, Lords, and Commons at home; but any Act may be set aside by the Queen's disallowing it.

The islands are divided into nine parishes, and each parish sends four members to the House of

Assembly. The representative must be a person qualified by possessing real estate of 240*l.* sterling in value; and an elector must have a qualification of 60*l.* sterling in real estate.

Thirty-six members, who compose the House of Assembly, are thought necessary to represent a population of only 12,000 inhabitants. At no time does party spirit run so high as at the election of a member. Upon such occasions, the whole island is in a ferment. To vote, is to stamp a man of one party or another.

It is utterly impossible for any one unacquainted with Bermuda to form an idea of the length to which party spirit is carried. It enters into the most private relations of life. A tory and a radical are as distinct, and have as little in common between them, as if they were men not only of different countries, but of countries hostile to each other. The most admirable proposition that united wisdom and patriotism ever contrived, if emanating from one party, would be received with coolness by the other. In private society, too, the distinction is very strongly marked: families of different parties do not mingle; and even tradesmen find their custom affected in a considerable degree by these political divisions.

Although this party spirit is in itself so thoroughly unimportant and contemptible — to all, excepting those who are under its influence—yet it deserves this notice in as far as it influences the state of society, in impeding the progress of civilization and the march of improvement. It has extinguished public spirit, which exists only among a few: for the petty triumph of party is preferred, at all times, to the public good.

The community have too frequently been encouraged to condemn all Government measures as imbecile, and ruinous to the colony. It requires, therefore, no ordinary firmness and integrity of purpose to bear up against such attacks, carried on as they are in so limited a population, with the rancour of political enmity, and (where personal vanity has been touched) with the bitterness of wounded pride and personal hatred. Even the tyranny of one man over a whole colony, however galling and severe it may be, can never be so intolerable as the tyranny of a majority over the minority, particularly when the former feel that their power is only transient, and that no time is to be lost in revenging the annoyances and injuries received from their opponents.

This is the case in Bermuda, and in almost all

the British colonies: where it is not only the constant change and the individual tyranny of a governor that are ruining the country, but the much greater calamity of one great party continually trying to supplant and destroy the other at all hazards. All persons of intelligence must allow that—the natural advantages of climate and productions of this colony being so great—if there were a government, however severe, which had the will and power to ensure protection to capital and investment, and to suppress the evils attending on the periodical elections to the House of Assembly, Bermuda would become one of the richest colonies of the western world.

To remedy these evils, and to bring about a wholesome state of things, we must have reform in the colonial legislature, so as to keep pace with the times.

I would suggest, therefore, that instead of the old system, a viceregal government with a Council of Advice should be substituted; the Council to be composed of three elements, or three different classes of persons: 1st, the representatives of the people; 2nd, the official servants of her Majesty; 3rd, the unofficial nominees of the Crown.

The last general election in 1856, of members for the House of Assembly, fully shows to what a degree

of bitterness party spirit may be carried in the colony—even to the subversion of all law and order ; so little regard did the majority of the House of Assembly entertain for the representative of our gracious Sovereign, and so small was the value which they attached to the proper administration of government.

Before dismissing the subject of the civil government, I think that it will not be out of place to give some explanation to the general reader on the subject of British establishments in the West India colonies.

CHAPTER IV.

BRITISH WEST INDIES.

The British establishments in the West Indies—The branches of the Legislature—The Governor—The Council—The House of Assembly.

THE British establishments in the West India colonies conform very nearly, in their internal constitutions, to that of the mother-country. Their different orders of judicature are exactly like those of England; and their legislatures, in general, respectively consist of three distinct branches; *i. e.* a Governor, representing the Crown; Council, or Upper House; and a body of Delegates, representing the people at large.

Of the powers and privileges claimed and exercised by these branches respectively in their own little sphere, and the source whence they are derived, I give the following brief account.

Governor.—Every chief governor in the British colonies is appointed by letters patent under the great seal of Great Britain. He receives by courtesy

the title of Excellency, and is vested with the following powers:—

First. As captain-general and commander-in-chief, he has the actual command of all the land forces within his government (except only when a general officer is employed on the staff), and he commissions all officers of the militia. He appoints the judges of all the different courts of common law, and in all the islands, except Jamaica, I believe these gentlemen hold their seats during the Governor's good pleasure. He nominates and supersedes at will the custodes, justices of the peace, and other subordinate civil officers; and, although in respect to some of the above appointments and dismissions he is directed to ask the advice of his Council, this direction is of little avail, inasmuch as the members of this body are themselves liable to be suspended by the Governor on the most frivolous pretences, or even without any cause assigned: a circumstance, by the way, which not unfrequently happens: and having thus reduced the board under a number limited by his instructions, he can immediately restore it to its full complement. He has the power, with the advice of his Council, to summon General Assemblies; he appoints the place of their meeting; and when met, he possesses a negative voice in the legislature:

for without his consent no bill passes into a law ;— and he may from time to time, as he alone shall judge needful, adjourn, prorogue, or dissolve all such General Assemblies. He has the disposal of all such civil employments as the Crown does not dispose of; and with respect to such offices as are usually filled up by the British Government, if vacancies happen, the Governor appoints *pro tempore*, and the persons so appointed are entitled to all the emoluments, until they are superseded from home, and until the persons nominated to supersede them arrive in the colony. The Governor claims the privilege also, in extraordinary cases, and has been known frequently to exercise it, of suspending even such civil officers as act immediately under her Majesty's authority, or by commission from the Board of Treasury or Admiralty, in high and lucrative employments, such as the Attorney and Advocate General, the Collectors of the Customs, &c., and of nominating other persons to act in their room, until the Queen's pleasure shall be known therein. He is also empowered to extend the Queen's gracious pardon to all criminals, except only in cases of murder and high treason; and in these cases, the Governor is allowed to reprieve, until the signification of the royal pleasure.

Secondly. The Governor has the custody of the great seal, and, in most of the colonies, presides solely in the High Court of Chancery.

It is the practice in some of the Windward Islands for the Council to sit as judges in the Court of Chancery with the Governor. Process, however, is issued by the Governor alone, and tested in his name; and the Governor commonly exercises within his jurisdiction the same extensive powers as are possessed by the Lord High Chancellor of Great Britain.

Thirdly. The Governor is Ordinary, and collates to all vacant church benefices. He has also the power of granting probate of wills, and administration of the effects of persons dying intestate. He grants licences for marriages, and licences for schools, &c., and is sole judge in all matters relating to the consistorial or ecclesiastical law.

Fourthly. The Governor presides in the Court of Error, of which he and the Council are judges, to hear and determine all appeals, in the nature of writs of error, from the superior courts of common law.

Fifthly. The Governor is also Vice-Admiral within the extent of his government. As such, he is entitled to the rights of jetsam, flotsam, &c.; and in time of

war he issues his warrant to the judge of the Court of Vice-Admiralty to grant commissions to privateers.

Lastly. A Governor of a colony, besides various emoluments arising from fees, fines, forfeitures, and escheats, has an honourable annual provision settled upon him by Act of Assembly, for the whole term of his administration. For, in order that he may not be tempted to prostitute the dignity of his station by improper condescensions to leading men in the Assembly, he is restrained by his instructions from accepting any salary, unless the same be settled upon him by law, within the space of one year after his entrance upon the government, and expressly made irrevocable during the whole term of his residence in the administration. And this, in my opinion, is a wise and most necessary restriction.

Armed with such authorities, and possessing such transcendent pre-eminence and privileges as above described, it is not to be expected, from the common fallibility of human nature, that every Governor of a colony (placed at so great a distance from the mother country,) should, on every occasion, *bear his honours meekly*. Great caution is therefore undoubtedly necessary, on the part of a British Minister, in the choice of persons for a trust of such great weight and dignity; the powers in question being

more extensive than those which the laws of England allow to the Sovereign herself. It is, however, a melancholy truth that party zeal and connections are commonly the most forcible recommendations with which a candidate for a distant government can present himself.

The Council.—The members of this board are severally appointed by the Royal *mandamus*, directed to the Governor, and countersigned by the Secretary of State, and the names of the several members for the time being are inserted in the Governor's instructions. In Jamaica their full complement is twelve, in some of the smaller islands ten; and in case of as many vacancies, by death, absence, or suspension, as reduce the board under seven, the Governor, or Commander-in-Chief, is empowered to fill up to that number, but no further. Their privileges, powers, and offices are as follows:—

First. They are by courtesy severally addressed in the colonies by the title "Honourable;" they take precedence next to the Commander-in-Chief; and, on the death or absence of the Governor, the senior military officer in command of the troops succeeds to the government, under the title of President.

Secondly. They are a Council of State, the Governor, or Commander-in-Chief, presiding in person, to

whom they stand in the same relation as the Privy Council in Great Britain does to the Sovereign. But although every Governor is directed by his instructions to advise with his Council on most occasions, I do not know that in his executive capacity he is absolutely bound to abide by their advice. Doubtless he is at liberty to act in most cases not only *without*, but even *against*, their concurrence; he may, it is true, by so doing, incur the Sovereign's displeasure, but his proceedings are nevertheless efficient and legal within the colony.

Thirdly. They are named, in every commission of the peace, as justices throughout the colony to which they belong.

Fourthly. The Council, together with the Governor, sit as judges in the Court of Error or Court of Appeal in civil causes from the Courts of Record; and in some of the islands two or more of the members sit with the Governor in the Court of Chancery as Assistant-Commissioners of the Great Seal, as I have before stated. Appeals from Chancery, therefore, lie not before them, but are, by the Sovereign's order, transmitted before her Majesty in Council.

Fifthly. The Council is a constituent part of the legislature, their consent being necessary in the enact-

ing of laws. In this capacity of legislators they sit as the Upper House, and in most of the colonies are distinct from the Governor; claiming privilege of Parliament, ordering the attendance of persons and the production of papers and records, and committing for contempt. They enter protests on their journals after the manner of the House of Peers, and have their chaplain, clerk, usher of the black rod, &c.

It might appear singular that the same body of men should act in two such different capacities and functions—as a Privy Council, sworn to secrecy and fidelity, and as an Upper House of Legislature. “The admitting such a distinction,” says a late Governor, “may be supposed even to free them from all obligations of the oath they take as councillors; because their duty to the people as legislators may seem to oblige them very frequently to support opinions repugnant to a Governor’s schemes.”

But to this it may be answered, that if the Governor’s schemes are, in the opinion of the Council, repugnant to the true interests of the people, their opposition to such schemes cannot be deemed a violation of their oath of fidelity, nor does it necessarily follow that they thereby divulge what they have sworn to keep secret.

We shall find that the colonial parliaments are re-

quired to copy, as nearly as circumstances will admit, the example of the Parliament of Great Britain.

The freeholders are assembled in each town or parish respectively by the Queen's writ; their suffrages are taken by an officer of the Crown, and the persons elected are afterwards commanded, by royal proclamation, to frame statutes and ordinances for the public safety. When met, the oaths of allegiance, &c. are administered to each of them; and a Speaker being chosen and approved, the session opens by a speech from the Queen's representative. The Assembly then proceed, as a grand provincial inquest, to hear grievances, and to correct such public abuses as are not cognizable before inferior tribunals. They commit for contempts; and the courts of law have refused, after solemn argument, to discharge persons committed by the Speaker's warrant. They examine and control the accounts of the public treasury; they vote such supplies, levy such taxes, and frame such laws, statutes, and ordinances as the exigencies of the province or colony require. Jointly with the Governor and Council, they exercise the highest acts of legislation, the judges being sworn to give effect to their ordinances even in matters of life and death; and many persons are known to have undergone capital punishment

awarded by laws passed in the colonies, even before they had received the Royal assent. On the whole, provided their commercial laws be not repugnant to those of Great Britain, there are no concerns, of a local and provincial nature, to which the authority of the colonial legislature does not extend.

As the legislative power of Great Britain, therefore, is supreme only in a relative sense even within the realm where the people themselves participate in its authority, much less can it be said to be supreme, in all cases whatsoever, over the colonies. It has indeed been solemnly declared by Parliament itself, that it has such a power. Nevertheless, it would not be difficult to point out many cases, and to imagine others, wherein the authority of Parliament has been, and may again be constitutionally exerted, in regard to the colonies, without abolishing every restriction on the part of the Governors, and extinguishing every right on the part of the governed.

It is beyond all question, that every addition to the wealth and greatness of the colonies contributes at the same time to the augmentation of the mother country's own riches and power. And such, before the unfortunate divisions which occasioned the Declaration of Independence of the United States of America, was the commercial system adopted by

Great Britain, and submitted to by her American dependencies. To descant on the several parts, properties, and effects of the system of restriction and monopoly,—to show that it secured every degree of authority in the parent over the child, which is compatible with the happiness and freedom of mankind; and, finally, that it might have answered in the highest degree, if Great Britain had happily confined her pretensions to the limits originally prescribed by herself, for these purposes—it would be necessary to enter into a large and comprehensive discussion, to which the design of my work does not extend.

CHAPTER V.

JUDICATURE, LEGISLATION, REVENUE, ETC.

Church Establishment—Courts of Law—The Court of Chancery—
—the Court of General Assize—The Court of Exchequer—
The Court of Ordinary—Instance Court of Vice-Admiralty—
The Court of Quarter Sessions—The art of legislation—The
Public Press—Trade—Revenue.

Of our church establishment we have nothing to say disparagingly, and can speak in very favourable terms of the clergy in general.

The Episcopal is the established Church in Bermuda. It is comprised in the see of Newfoundland, and the clergy are maintained on fixed salaries voted by the legislature, and voluntary contributions of the people.

The rectories are five, and there are ten churches, and also five Episcopal chapels. In the parish of Warwick there is a Presbyterian kirk, also a smaller one in Hamilton. The Wesleyans have a fine chapel in the town of St. George, a commodious one in Hamilton, and seven smaller places of worship

throughout the islands. The Roman Catholics have very recently built a neat chapel in the town of Hamilton.

A few remarks concerning the constitution and jurisdiction of the courts for the administration of the laws in the colony, may not be out of place here.

And first as to the Court of Chancery.—This court is constituted by the Governor and Council, or any five of them, of whom the Governor must be one; and has power and authority to hear, examine, determine and decree all causes and matters whatever, as fully and amply as the High Court of Chancery in England.

The next in order is the Court of General Assize, or Court of Record, which is held at the town of Hamilton twice a year (in May and November) by the Chief Justice of the Colony and one or more—not exceeding two—Assistant Justices; or, in case the latter are absent or unable to attend, by the Chief Justice alone. Should the Chief Justice be absent, or prevented by illness, the court may be held by two Assistant Justices. It was regulated by a Colonial Act passed in 1814, and its proceedings and practice have been simplified and amended by an Act passed in 1834. In this court are vested the same rights, powers, jurisdiction, and authority as belong to, or

are enjoyed and exercised by the Courts of Queen's Bench, Common Pleas, Oyer and Terminer, General Gaol Delivery, and Assize in England.

The assizes commence on the first Mondays in May and November, and continue, if necessary, for the trial of jury causes until the second Saturday following, on which day the juries are discharged. The court has then power to adjourn for a period not exceeding sixteen days, when it may sit for hearing matters of law. This court holds pleas in all manner of causes and actions, civil and criminal, and has power to make rules and regulations respecting merely the practice of the courts, as may be expedient, and, as nearly as conveniently may be, agreeable to the practice established in the Common Law Courts at Westminster Hall. An appeal lies from this court by writ of error to the Court of Errors, consisting of the Governor and Council, or any five of them (except such as may be judges of the court appealed from), of which five the Governor must be one; and if the judgment entered, or debt, or damages laid, exceed 300*l.* sterling, an appeal lies from this court to the Queen in Council. This court may also make rules of practice merely, agreeable to the laws and practice in England.

The other courts of justice are,—a Court of

Exchequer, a Court of Ordinary (of limited powers), an Instance Court of Vice-Admiralty, and a Court of Quarter Sessions; and their proceedings are in conformity to the laws and practice of England, as nearly as local circumstances will admit.

We now come to speak more particularly of the legislative machinery.

It must be admitted by every right-minded person, after due reflection, that the present system is too costly, too intricate, and far too extensive for a colony like Bermuda. No question was ever made of this, except from some one who directly or indirectly received or expected to receive advantage from the continuation of the system. In the early history of the colony, we learn that at various times attempts were made to reduce the number of the Assembly-men; and, in later years, successive Governors, if they have not openly attacked the system, have in various ways evinced their sense of the inconvenience attendant on it. It is well known that Governor Reid was fully aware of the absurdity of having thirty-six representatives for so limited a population. Governor Elliot, on one occasion, expressed himself in a decided manner as to the protraction of the session unnecessarily,—a subject of complaint intimately connected with the

extraordinarily large number of members; and other persons well versed in colonial institutions, have expressed their conviction that such a cumbrous machinery is quite out of proportion to the limits and requirements of the colony.

In the following table will be seen the cost entailed on the country for six years' pay to members of the House of Assembly. For facility of calculation, we give the amount in dollars, as they are commonly understood in Bermuda:—

In 1850 the House of Assembly cost	...	\$1,844
„ 1851	... ..	2,320
„ 1852	... ..	2,638
„ 1853	... ..	1,456
„ 1854	... ..	3,002
„ 1855	... ..	2,456
		<hr/>
		\$13,716

From the above statement it appears that in six years the House of Assembly cost the country, for members' salaries only, 13,716 dollars; but this is very far from the actual expense of six years' legislation. The allowance to the Legislative Council, which amounts on an average to nearly one-fourth of that of the Assembly, the pay of officers of the two Houses, and other occasional charges, such as law expenses, will double this amount. The gross expense there-

fore of six years' legislation in Bermuda is certainly not less than *twenty-six thousand dollars!*

After comparing the expenditure with the revenue of the colony, it will be found that upwards of one-twelfth of the gross income from all sources is swallowed up by the process of law making, mending, and renewing.

It does not follow that, as the House of Assembly absorbs but one-half of this gross cost, it is therefore an economical institution. We must not lose sight of the fact that the expenses of the Legislative Council, and all the other larger items, bear an exact proportion to the length of time the Assembly sits; and as a matter of course, the whole expense of legislation always bears an exact relation to the time consumed in the Lower House. In 1852-3 the House of Assembly cost but 1,456 dollars, and the Council 388 dollars; whilst in 1853-4, the former House entailed a charge of 3,002 dollars, and the latter, in consequence, 798 dollars.

The public will hardly be prepared to learn to what an extent the temporary measures, so much in vogue in this colony, are carried. It will be seen by a few figures, that the principal object of these enactments is the *making work for future legislators*. Hence, a constant circle of employ-

ment is provided for the House, and a constant drain is kept up on the public chest, or rather, to speak more plainly, on the *private chest*; the private pocket of each tax-payer being, in fact, the source from whence all this expenditure is met. As matters now stand, every man, woman, and child in the colony, of all ages and colours, pay, on an average, nearly 2*s.* a year for legislation alone; and, as a large number pay very little, or nothing at all, a great many, of course, contribute considerably more than this.

The following figures may throw some light on law-making in Bermuda:—In 1850, 17 laws were passed; in 1851, 10; in 1852, 24; in 1853, 11; in 1854, 19; and in 1855, 14; making a total of 95 Acts. Of these laws, 27 were permanent, and 68 temporary. In 1850, of the 17 Acts passed, 6 only were temporary, and 12 were permanent; but in 1851 there was only 1 permanent Act to 9 temporary Acts. In 1852 there were 5 permanent to 18 temporary Acts. In 1853, of 11 Acts passed, not one was permanent! In 1854, 6 out of 19 were permanent, but several of these 6 were in their nature limited in point of time. In 1855 there were 3 permanent, and 11 temporary Acts passed.

As many persons, perhaps, may not know what is

meant by permanent and temporary Acts, a few words here in explanation may not be deemed out of place.

A few of our Bermuda laws are passed without any particular time being named during which they are to continue in force; and therefore they remain in force until the legislature repeals them. The great majority of them are passed for a few years only, and require every now and then to be *continued*. For instance, all the laws passed in 1853, however excellent they may be, must, notwithstanding, die a natural death within eight or ten years of their enactment, unless by some subsequent Acts they shall be continued in force.

We are aware that in former times, in some of the colonies, Houses of Assembly adhered to this temporary mode of legislation with great tenacity. There are "temporary Acts," which continue to be renewed from time to time in Bermuda, that have been in force for half a century! *

The result is, that law-making becomes a much more costly affair than there is any occasion for,—since each successive House of Assembly is always engaged in reviving the moribund measures of its predecessor, and saving them from untimely death. Eleven out of twenty-three Acts passed in 1852

* *Vide* Appendix B.

would have been unnecessary, had the laws which they were merely passed for the purpose of "continuing" been allowed to remain in operation, without any limitation of time. Of the eleven Acts passed in 1853, four were for the purpose of prolonging, for a short time, enactments already in force; and the other seven (as has been already intimated) were only to continue in force for a few years, after which they must again be subjected to the same process of renewal. This is certainly a very ingenious mode of consuming time, if it were nothing else. Truly, the science of legislation is brought to great perfection in the Bermuda House of Assembly! I would wish my readers to understand, that I condemn the system, not the individual members; for "they are all—all honourable men."

Of the Public Press a few words may be said here. Doubtless, every European is very much astonished, on his arrival, at the manner in which the press is conducted in Bermuda: at the screaming fits—to speak in medical parlance—with which it is afflicted, when it fancies itself to be suffering under some grievous moral wrong, or attacked by some daring assailant of public virtue.

It is fortunate for some of the quiet people of our little community, that there are now only two

journals to contend with, these journals being the organs of one or other of the two parties; and so fearful are they of giving offence to the party which patronizes them, that anything like freedom of opinion is seldom or never found in their columns. The party spirit of one of these journals must be characterized as furious: it is conducted apparently with the sole view of pleasing a few of its patrons. The acrimony, invective, and personal abuse, which formerly figured in its columns, and which are far different now, undoubtedly surprised any stranger who had been accustomed to the more gentlemanly tone of the English press, and certainly reflected no credit upon the taste of the public, who were not only satisfied, but delighted with this style of writing, and who, with few exceptions, looked upon the most powerful and most nervous writing as tame, if it were not seasoned with personality. There was, indeed, one excuse for this depraved appetite on the part of the public: it was that in the House of Assembly an example was set. The harangues in that House were too frequently a tissue of personalities—such as in no well regulated assembly would be endured for a moment; but I am happy to state that, owing to Governor Murray's showing a timely and conciliating spirit, a better state of

affairs now exists. Nothing, by-the-by, can be a better illustration of the indifference of the natives of Bermuda towards all that lies beyond their little world, than the contents of the local papers. These are small sheets: one and a half or two of these small pages, are filled with island news, the proceedings of the House of Assembly, and original articles and letters upon local politics. The most scanty space imaginable is made to suffice for the world at large. The most important debates in the British Parliament are despatched in a paragraph; and the foreign intelligence of Europe is evidently a matter of very minor consideration. These journals enjoy a large circulation, and are conducted with a good deal of talent, though unhappily made subservient to the narrow views of party.

Up to the year 1843, the trade of Bermuda had been considerable, but, till within a recent period, it has considerably decreased, in consequence of the warehousing system having been abolished, which assisted in supporting the commerce of the Bermudas, by giving the British shipping the privilege of carrying foreign pork, beef, and flour to the West Indies, after having been landed in the North American Provinces.*

* *Vide* Appendix C.

But little attention has as yet been paid to agriculture, nearly all the articles of food being imported. Manufactured articles of almost every description are brought from England. Articles of food—such as beef, pork, lard, butter, corn, flour, pulse, rice, &c.—are principally imported from the United States of America; while dry salt fish, salmon, mackerel, &c. are brought from Nova Scotia and Newfoundland. Sugar and coffee are of late years generally imported from the West Indies.

The revenue covers the expenditure of the colony; and an *ad valorem* duty of 3 per cent. levied on imported articles in 1843 has since been reduced to $2\frac{1}{2}$ per cent.* The imperial duties are collected by a small staff of officers, with the colonial treasurer at their head, whose designation now is that of receiver-general, and who also superintends the collection of the local revenue. For his services as collector he receives a salary of 300*l.* per annum, thereby making the collection of the revenue cost a much lower rate than formerly. For statistics, see the annexed tables.

* *Vide* Appendix D.

COMPARATIVE SYNOPSIS OF THE REVENUE OF BERMUDA FOR THREE CONSECUTIVE YEARS.

Sources of Revenue.	Year ending March 31st, 1854.			Year ending March 31st, 1855.			Year ending March 31st, 1856.		
	£	s.	d.	£	s.	d.	£	s.	d.
Spirits, wine, and malt liquors ...	4,696	7	9	5,138	0	4	4,979	6	0
Tobacco, snuff, and cigars ...	356	18	1	356	1	4	485	3	8
Beef cattle ...	230	16	0	201	4	0	244	0	0
All other imports ...	2,946	19	10	3,598	6	4	3,700	17	7
Auction-tax ...	216	19	0	233	19	6	309	14	3
Light-tolls ...	427	19	0	413	6	8	525	4	4
Postages from General Post Office, St. George ...	...	...	...	127	11	0	171	4	3
Miscellaneous ...	131	1	11	223	5	9	140	5	11
Total ...	£8,997	1	7	£10,290	14	11	£10,555	15	7

VALUE OF IMPORTS THAT PAID *ad valorem* DUTY.

Year ending 31st March, 1853	...	£96,189	1	4
" " 1854	...	89,919	15	9
" " 1855	...	97,199	14	11
" " 1856	...	112,090	15	3

ABSTRACT OF THE PROCEEDINGS OF THE HONOURABLE
HOUSE OF ASSEMBLY.

Estimated Revenue and Expenditure at the Colonial Treasury, from 31st March, 1859, to 31st March, 1860.

1859. June 1.—To payments from the Treasury	£	s.	d.
from 31st March to 1st June, 1859	...	867	13 2
To quarterly salaries and other fixed expenses for quarter ending 30th June, 1859	...	1,340	10 0
To Treasury liabilities for grants undrawn per statement to this date	...	£5,880	5 4
Less on account of Causeway, 1,381l. 4s. 7d. Ditto St. George's Church, 600l.	...	1,981	4 7
		3,899	0 9
To expenses for legislature for 1859	...	550	0 0
Public bills from 30th March, 1858, to the 30th April, 1859	...	£1,157	12 7
Less amount paid quarterly under Act No. 4, 2nd Session, 1851	...	790	17 8
		366	14 11
		£7,023	18 10
To Balance brought down	...	3,679	8 5
To official salaries and annual expenses for the service, ending 30th June, 1860, per statement	...	5,922	0 0
To public bills for the same period, estimated at	...	1,200	0 0
To expenses legislature for 1860, ditto	...	550	0 0
To lighthouse expenses for same time, ditto	...	250	0 0
		£11,601	8 5

1859. March 31.—By balance in Treasury this date as per report Auditing Committee ...	£	s.	d.
June 30.—Revenue for quarter ending 30th, 1859, estimated at	1,644	10	5
Balance estimated to be due from the Treasury to 30th June, 1859	1,700	0	0
	3,679	8	5
	<hr/>		
	£7,023	18	10
<hr/>			
By estimated revenue from Lighthouse Tonnage			
Duty for the year ending 30th June, 1860 ...	450	0	0
Ditto, ditto, under Post Office Act ...	200	0	0
Maintenance lunatics, estimated at ...	75	0	0
Amount to be provided for the public service for the ensuing year	10,876	8	5
	<hr/>		
	£11,601	8	5

*Official Salaries and other Annual Expenses from the
the 30th June, 1859, to the 30th June, 1860.*

Salary of his Excellency the Governor	£500	0	0
Clergy of the Church of England ...	£600	0	0
Wesleyan Missionary Establishment 120	0	0	
Presbyterian Establishment ... 120	0	0	
	840	0	0
Receiver General	£300	0	0
Assistant Receiver General ...	170	0	0
Revenue officer, Hamilton, 120l.; allowance for boat, 20l.	140	0	0
Revenue officer, St. George's, 100l.; allowance for boat, 20l.	120	0	0
Revenue officer, Ireland, 100l.; allowance for boat, 30l.	130	0	0
Treasury clerk	100	0	0
Controller of Customs, Hamilton ...	50	0	0
" " St. George's 30	0	0	0
	1,040	0	0
	<hr/>		
Carried forward	£2,380	0	0

JUDICATURE, LEGISLATION, REVENUE, ETC. 75

Brought forward	...	...	...	£2,380	0	0
2 police magistrates at 60 <i>l.</i> each	...	...	...	£120	0	0
4 Constables	...	...	...	130	0	0
				<hr/>		
				250	0	0
4 Postmasters	...	...	...	300	0	0
8 Receiving officers	...	...	...	24	0	0
Mail carriers	...	...	...	335	0	0
				<hr/>		
				659	0	0
Principal keeper, lunatic asylum	...	...	...	100	0	0
Assistant „	„	„	...	60	0	0
Matron	„	„	...	30	0	0
Assistant matron	„	„	...	20	0	0
Medical superintendent	...	...	...	50	0	0
				<hr/>		
				260	0	0
2 Gaolers at 60 <i>l.</i> each	...	...	...	120	0	0
2 Matrons at 15 <i>l.</i> „	...	...	...	30	0	0
2 Chaplains at 12 <i>l.</i> each	...	...	...	24	0	0
2 Surgeons at 20 <i>l.</i> each	...	...	...	40	0	0
Superintendent hard labour	...	...	...	50	0	0
				<hr/>		
				264	0	0
Principal keeper of lighthouse	...	...	...	100	0	0
2 Assistant „	„	„	...	100	0	0
1 Clerk	„	„	...	20	0	0
1 Superintendent machinery	...	...	...	30	0	0
				<hr/>		
				250	0	0
Courts of justice, jurors, constables, and witnesses				700	0	0
Provost Marshal General	...	...	...	200	0	0
Clerk of Council	...	...	...	110	0	0
Clerk of Assembly	...	...	...	125	0	0
Ferry keeper	...	...	...	114	0	0
Annuity to G. F. Mallory	...	...	...	60	0	0
Board of Education	...	...	...	£450	0	0
Inspector of Schools	...	...	...	80	0	0
Clerk of the Board	...	...	...	20	0	0
				<hr/>		
				550	0	0
				<hr/>		
				£5,922	0	0

The undersigned Committee appointed by the House of Assembly to inspect the annual accounts rendered against the public to April 30th, 1859, beg leave to submit a statement thereof, amounting to £366 14 11

To which should be added the amounts of claims against the Colony to March 31st, audited and passed by the Committee of the Council and Assembly under the Act providing for the quarterly payments of claims of certain creditors 790 17 8

£1,157 12 7

The Committee beg leave to submit a statement showing in the whole the amount of 148*l*. 11*s*. 8*d*., which we refer to the consideration of the House, most of which being expedient for the public service, we recommend to be paid.

ROBT. S. MUSSON,
WM. J. COX,
MORRIS M. FRITH,
H. G. HUNT,
WM. B. PEROT.

Sessions House, Hamilton, June 13th, 1859.

CHAPTER VI.

FISHERIES, TOPOGRAPHY, ETC.

Fisheries—The most esteemed fish—Their brilliant colours—Peculiar fashion of baiting a hook—A “full bait”—The fisherman taking it easy—The goat-fish—The doctor-fish, and their curious glassy lancets—The soap-fish, &c.—Description of Bermuda—The group of islands—Their calcareous formation—Subterranean channels—Oval form of the group—Eight “tribes”—The town of Hamilton and its general aspect—The shops—The houses in the suburbs—The semi-circular suburb—Mount Langton—Flag-staff—The public buildings.

THERE is no part of the globe in which a greater variety and excellence of fish abound, than in the waters bordering on the shores of Bermuda, among the most delicate of which, we may mention a few, such as angel-fish, chub, grouper, rock-fish, &c. These are considered by connoisseurs to be the most esteemed fish for the table. The most common descriptions are the snappers, yellowtails, hinds, the grunts and the squirrels (species of *Scianidæ*). Many of these are of brilliant colours. The yellow-tail (*Mesoprion chrysurus*), for example, is pale azure

on the back, and pearly white below, with a broad band of the richest yellow along each side, which is the hue also of the dorsal and caudal fins.

The spotted snapper (*Mesoprion uninotatus*) is white, traversed by longitudinal lines of yellow; the dorsal and caudal fins have borders of rose pink, and there is a large oval black spot on each flank.

The hind (a species of *Serranus*) is a handsome fish. It is studded with scarlet spots on a grayish ground; the fins are yellow, especially the caudal, with black borders, having a narrow white edge. Sometimes the pectorals are brilliantly scarlet.

But the above-named yield to the different species of *Hæmulon*, which, under the name of grunts, are well known and highly esteemed throughout Bermuda. Their characteristic markings and hues are oblique parallel lines of gold, on a silver or metallic azure ground, with delicately tinted fins, and sometimes spots of peculiarly intense lustre; the whole interior of their mouth is generally of the finest scarlet.

All of these are taken with the line, and with the seine, as well as in pots. The snappers are perhaps more highly esteemed than the grunts, but both are excellent.

They chiefly frequent what is called "broken ground," where patches of white sand alternate with

masses of rough rock and fields of grass-like weeds. They range from deep water to the rocky shore; are taken abundantly with the seine, and bite freely at a bait of pilchard (*Clupea pilchardus*); but only fish of small and middling size are commonly caught in pots. The fish of large dimensions (of two feet and a half) will rarely bite at a hook worked in the usual manner. For then the fisherman takes a wire hook (No. 1 or 2) as large as a goosequill, which he throws overboard, baited with a pilchard, but in a peculiar fashion. One side of the pilchard is split nearly off, remaining attached only by the tail; this is allowed to hang free, and a slice from the back and one from the belly are allowed to hang in the same way. The hook is then passed in at the mouth, out at the gills, and again through the middle, and the head is tied to the top of the hook; another slice is then put upon the hook, and made to hang down. This is designated a "full bait." No sinker is attached, but its own weight is sufficient to carry it nearly to the bottom. The line being passed with two turns round the fisherman's finger, he seats himself comfortably in his boat, and awaits the bite of the first large fish that may choose to essay the baited hook; which it usually does by taking in the whole at a gulp.

The seine is here, as elsewhere, the chief resource of the fisherman; and many kinds of fish are taken by this means that rarely enter a fish-pot or seize a bait, together with many species that are called *rubbish*, as being of no esteem in the market, though often interesting to the naturalist.

Another fish of rather pleasing aspect (*Upeneus maculatus*, Cuv.), is from its dependent beards called goat-fish. This fish, in its general hue, is pink, fading to white below, with three large livid spots on each side; the central portion of each scale, on the upper parts, is of pale pearly azure tint. We have also the beautiful angel chætodon (*Holocanthus ciliaris*); the doctor-fish (*Ananthus chirurgus*), so called from the curious glassy lancets that they carry in a sheath on each side of the tail; and a parrot-fish (*Scarus cæruleus*), remarkable for its abrupt, almost vertical profile, white eye, and brilliant azure hue. Here also is a species of *Aulastoma*, or soap-fish, and 'a handsomely-marked fish usually called the flounder, but in reality a kind of turbot (*Rhombus argus*), being studded all over the upper side with large blue rings, enclosing pale yellow areas, on a dusky brown ground colour. There are many others, such as sharks, hedgehog fishes, whales, *et hoc genus omne*; but these we

will not attempt to describe. A considerable tonnage in boats, and a number of people, are employed in the Bermuda fisheries; the produce of which forms a large item in the consumption of the islands.

For a better comprehension of the "Bermudas," I shall now give a geological and topographical description of them.

The group of islands forming the little archipelago will require minuter description, for the purpose of showing the varied features of each, and of the whole of them collectively. The surface is very irregular; and although there are no lofty mountains, we see one or two points that may be considered as rather high hills. There is no appearance of wood until we approach close to the sea; and then the cedar-trees, which grow along the shore, show at once that we have reached a new world. The valleys intersecting these hills are covered with vegetation, but many of the hills themselves are naked and barren, while others are richly clothed with timber.

The formation of the islands is chiefly calcareous, consisting of the spoils of zoophytes, of which several species are strikingly evident. These are so cemented together, that they sometimes form a

hard, compact limestone, with conchoidal fracture and translucency on the edges; and at other places they exist as a dry, soft, friable chalk, or soft marl, in which are found a great variety of shells, many of them in perfect preservation. In many places the organic remains constitute the principal, and in all, a very considerable proportion, of this formation; and it has been observed, that although these remains are intimately blended together in the common structure, they still appear to be arranged in families.

Upon the strata of the coralline mass, beds of a white shelly sandstone are occasionally to be found. This species of sandstone is quarried for building purposes. It is very porous. When the beds are sufficiently thick, they have some appearance of stratification.

Calcareous spar occurs abundantly, and frequently white granular limestone, which is attached to the common rock, and, like the spar, appears to have been deposited in accidental cavities at a comparatively recent period.

This calcareous formation is extremely cavernous; so that dislocations and sinking of the surface occasionally take place; and, from general appearances, I am inclined to believe that they occurred very

frequently, and, to a considerable extent, at former periods.

There are immense fissures in almost every part of the island, through which the water lodged on the surface is drained off and conducted to the ocean by means of subterranean channels. Superficial springs of fresh water are very few, and the inhabitants are supplied with this necessary article of consumption principally from wells, and from cisterns of rain-water.

The group of islands and the surrounding reef are of an oval form, the longest diameter lying north-east by east and south-west by west, in length twenty-five miles; and the breadth is from ten to twelve nautical miles. The islands themselves are on the south-east side of the reef, and are shaped in the most irregular manner. In the general direction of the reef given above, they extend in length about fifteen miles. The greatest breadth is about five miles. The islets are one hundred and fifty in number. They are situated in latitude $32^{\circ} 15'$ north, longitude $64^{\circ} 51'$ west, and are distant from Cape Hatteras, in North Carolina, about 600 miles.

The chief of the group is the Great Bermuda Island, containing the town of Hamilton; St.

George's, with its town of the same name ; Somerset Island ; and Ireland Island, on which is the dock-yard. Besides the above, there are St. David's, Longbird, Paget's, Smith's, Cooper's, Nonsuch, Castle, and many inferior islands and rocks.

The Great Bermuda, termed by way of distinction the "Mainland," was originally divided into eight districts, called "tribes." A short description of these small districts may be useful.

Hamilton Tribe, which is the most northern and eastern, is a mere belt of sand, rock, and a little vegetable mould, surrounding a lagoon, which is called Harrington Sound. This fine sheet of water might be made a secure harbour for shipping by cutting a canal into it, the present channel being a mere shallow creek.

The Hamlet of the Flatts is situated on the southern bank of the creek, in Smith's Tribe. Tuckerstown, which lies eastward of the lagoon, appertains to Hamilton Tribe. Smith and Devonshire Tribes follow in succession, in a south-western direction. Pembroke occupies a spur of the island, which there trends in an east and west direction, and is divided from Paget Tribe by an inlet called Paget Port—commonly Crow Lane.

The town of Hamilton presents little that is

attractive to a stranger, though its aspect is characteristic enough of West Indian manners; it is situated in Pembroke, and on the north side of the inlet; it is a free port, and the seat of the legislature. You climb the wharf, and are immediately in a broad, long, rather low and straight street, which is the front street, nearly a mile in length, bordered by a row of the Pride-of-India tree, which forms a pleasant shade during the summer months. There is no pavement, and the sandy earth is ploughed into ruts by the carts. Most of the houses are shops, or "stores," as they are called in America; each store, whatever the character of its merchandise—whether shoes, drapery, "dry goods," hardware, spirits, tobacco, provisions, or what not—being usually fitted in the same manner, and having an open piazza in front, two or three yards wide, the ceiling being supported by slender pillars. Behind this piazza is the shop, which is fitted up with counters and shelves, somewhat in the English style; and over all are the rooms of the dwelling-house, furnished with jalousies, or strong venetian-blinds, which admit light and air from beneath, and exclude the sun's rays. Toward the suburbs the shops cease, the houses become more elegant, each enclosed in a court or garden, which is often adorned with the

beautiful fragrant blossoming trees and plants of the island, or such as unite fruit with beauty and shade. Of the former the rose geranium, the white jessamine, and the oleander, or South Sea rose—both beautiful and odorous—are great favourites; and of the latter we meet with the wide-spreading pomegranate, the tall papaw, and the golden-fruited members of the *citrus* genus, from the gigantic shaddock to the diminutive lime.

The town of Hamilton is backed by a range of heights; but between these heights and the town there is a level, varying from half a mile to a mile in breadth. This level forms a semicircular suburb, the arch of which is not less than three miles; and a large portion of this space is occupied by villas and cottage residences, with their gardens and orchards, the property chiefly of the native inhabitants of Bermuda, and occupied either by themselves, or by the English residents to whom they are let. These residences are not confined to the level ground; they encroach upon the heights also, adorning the slopes and crowning the eminences; and the general neatness of the exterior of these villas, with the substantial garden-walls and luxuriant foliage, produce a very favourable impression on the stranger.

The houses of those who are not connected with

trade, and of many of the most opulent merchants, are to be found in the suburbs, and in those newer streets which form the outlets; where also the English residents principally abide. Some of these streets are pretty, regular, and well built, having an open space, together with an ornamental garden-plot, in front of them. North of the town is a hill, called Mount Langton, on which is the Government House, and a flag-staff, by means of which communication is kept up between St. George, the Dockyard, and Gibbs' Hill. A few miles to the northwest of Mount Langton is the residence of the Admiral—St. John's Hill, or Clarence Lodge.

It is fortunate for the traveller that Bermuda possesses other attractions than those offered by its public buildings; for these are devoid of either beauty or interest; indeed, with the exception of Trinity Church, the New Hotel, the public offices, and two of the chapels in Hamilton, there are none deserving the name; and of these, Trinity Church and the New Hotel have alone any claim to architectural design.

CHAPTER VII.

GENERAL DESCRIPTION.

Paget Tribe—Warwick and Sandy's Tribes—Ireland Island—The Royal Dockyard—Naval Establishment—Hospital—The officers' residences—Anchorages—Grassy Bay—Boaz Island—New convict prisons—Somerset Island—Ellis Harbour—Reef extending from Spanish Point—Natural breakwater to the Great Sound—Romantic road from Clarence Lodge to Hamilton—"Brackish Pond"—"The Wells"—Wreck Hill—Gibbs' Hill—Description of Lighthouse on Gibbs' Hill—Telegraphic post—The "Sand Hills"—The direction of the great road—Shore of white sand—Holothurim—Views from the hills—Deep chasms—Declivities—Surfaces of sand-hills—Incrustation of the layers of sand—Transition of sand into crystalline limestone—Castle Harbour—St. George's Island—Harbour of St. George—Description of scenery by Thomas Moore—Fort Cunningham—The streets—The houses—The barracks—The roadstead.

PAGET TRIBE commences at the head of the port of that name, and, along with that of Warwick, runs to the south-west by west, the land trending with a gentle curve to some distance below Gibbs' Hill, where the latter tribe is joined by that of South-

ampton, which, with Sandy's, completes the district. Beyond this extremity of the Great Bermuda, in a north-north-east and south-south-west direction, lie the islands of Somerset, Gate, and Ireland, the latter being the property of Government.

Ireland Island is one of the four telegraphic signal stations established on the islands. The site of the Royal Dockyard and Naval Establishment is on the north extremity of this island, from the rest of which it is separated by a deep dry ditch. The island is one mile in length and a quarter of a mile broad. It is nearly all occupied by the buildings required for storehouses, and also with residences for the officers and artisans. The Hospital is situated on the highest part of the island, and is a very large and commodious establishment.

The officers' residences are built in the English style, and are very comfortable. The most important work is the Breakwater, which is similar to that of Plymouth, and was constructed principally by convicts. The Dockyard is kept in fine order.

There are two anchorages for men-of-war here—Grassy Bay, which lies outside a reef stretching across the sound from Spanish Point, the extreme of Pembroke Tribe; and another within that natural breakwater. The remoteness of this rendezvous from

the point of egress into the open sea was formerly considered as a great objection; but it no longer applies, as steam-vessels can in a short time tow the ships out to sea.

Between Ireland and Somerset Islands there are several smaller ones, the chief of which is Boaz Island, also the property of Government, and on which convict prisons are being built. A bridge connects Boaz with Ireland Island; and frequent communication is held between Boaz and Somerset Islands by means of a ferry-boat.

Somerset Island—one of the best portions of the group—was so named from the title of the King's favourite, Robert Carr, Earl of Somerset. Between the extremity of Sandy's Tribe and the south-west part of Somerset Island, there is a place of anchorage for merchant vessels, which is called Ellis, or Elies, Harbour. The passage through the shoals leading to it from seaward is, however, intricate and dangerous, and cannot be attempted by a stranger without a pilot. Its western point is Daniel's Head, off which is a small island.

From Spanish Point there is a reef extending towards Ireland Isle, about a mile and three-quarters in a north-west direction, which forms a natural breakwater to the Western or Great Sound.

Through this barrier there are navigable channels; that which is generally used by merchant vessels lies nearest to Spanish Point.

The road leading from Clarence Lodge to Hamilton town is an exceedingly romantic one. The remarkable tranquillity and seclusion, the picturesque effect of the little glens and their neat white abodes, the delightful and refreshing fragrance of the cedar, of the latana (or wild sage), and of other odoriferous plants that abound in these retired spots—the bright sunshine and clear blue sky, the cooling sea-breeze gently rustling the trees, the richness of the plumage of the blue and red birds—all conspire to render this place (which is about a mile and a half in extent) one of the most attractive spots in the island.

East of Mount Langton is Brackish Pond, near which are “The Wells,” a Government establishment for supplying water to the navy, should there be no water at the naval tanks on St. George’s Island. The westernmost projecting headland is Wreck Hill; it is the land looked for, and first seen, when approaching the islands.

Gibbs’ Hill is the highest and most conspicuous eminence observable near the south-west part of the coast; it is a smooth mount, entirely clear of trees,

with a lighthouse and a telegraphic post on its summit. To the westward, and contiguous to it, is a table-land, crowned with a grove of dark, tall cedars.*

Between Gibbs' Hill and Castle Island, to the

* The lighthouse was erected on Gibbs' Hill in the year 1845. It is of iron, and was constructed in London, at a cost of 5,500*l.*, which was borne by the home Government. The light was first exhibited on the 1st of May, 1846. It is a revolving light, on what is called the catadioptric principle, having a lamp of three concentric wicks, and is somewhat similar to one erected on the Isle of May in the Firth of Forth in Scotland. The light is 125 feet above the base, which is 245 feet above the sea; the total height of the column to the top of the nave is 133½ feet. The flash of the light is of extreme brilliancy, continuing for six or eight seconds: the interval between the flashes is about sixty-two or sixty-three seconds. The distances from which the light can be seen at different elevations are as follows:—

Correct Distances in					
			Nautical Miles.	English Miles.	
From an elevation of	10 feet ...	25.51	...	29.35	
"	" 20 " ...	27.10	...	31.08	
"	" 40 " ...	29.14	...	33.53	
"	" 80 " ...	32.15	...	37.00	
"	" 100 " ...	33.37	...	38.40	

Refraction allowed for.

The horizon is intercepted to an observer at the light by two hills, one intercepting an arc—

From N. 43° 24' E. true, or N. 50° 24' magnetic,

To N. 47° 34' E. true, or N. 54° 34' magnetic;

and the other hill, an arc—

From N. 49° 7' E. true, or N. 56° 7' magnetic,

To N. 57° 35' E. true, or N. 64° 35' magnetic.

With these exceptions the light is visible all round the circle. The latitude of the light is 32° 15' 4" N.; long. 64° 51' 36" W.

east-north-east, there are several sandy mounts, having the appearance of white cliffs, which in moonlight may be mistaken for breakers. These are very remarkable, and are called "sand-hills;" one of which is much more conspicuous than the others, being of greater extent, and having less verdure on its summit.

The great road of the southern side of the island, after passing the "sand-hills," runs along the coast to the lighthouse at Port Royal, often near the water's edge, and sometimes separated from the sea only by a narrow belt of wood. Close to the "sand-hills" the beach is composed of white sand, not siliceous, but consisting almost wholly of coral, shells, echinæ, &c. bleached and pulverized by the long action of the weather.

A few yards from the shore the bottom is composed of white tenacious marl, covered with a dense but short coat of marine grass. On this lie, in the shallow water, many *Holothuræ*; they are soft and flaccid when first taken out of their element, but after being held in the hand for a few moments they become tense and stiff, and usually discharge a small stream of water from the extremity of the body. They do this, I find, even if held under the water; it is doubtless the result of strong mus-

cular contraction. They are sluggish, unattractive animals.

The beautiful views from several hills out on the vales below them, especially from several eminences near the great southern road, are worthy of notice;—nature at once displaying a great variety of surprising prospects. Here the high impending rocks have a dreary, rueful appearance. The several deep chasms over which they project, are covered with the ever-flourishing sage-bush and prickly pear. The adjacent steep declivities are crowded with irregular precipices and broken rocks; and the view terminates in the tempestuous sea and the white waves incessantly breaking on the craggy shore.

The surfaces of the “sand-hills” undergo frequent changes; during gales the sand composing them may be seen driven by the wind, thickly covering the soil, and the trees and herbs growing on it.

Saline particles from the sea cause an incrustation on the surface of one layer of sand before a new one is deposited by a second storm, and this appears to be the cause why nearly all the rock lies in thin laminæ. This fact may explain why layers of dark-coloured vegetable mould are often found below white rock.

The transition of the coral and shell sand cast on shore by the waves and winds, may be traced through various stages, even till it becomes crystalline limestone.

At twelve miles east of the Great Sand-hill is Castle Harbour, in the entrance to which are several islets and rocks. On the largest of these is an old castle, which gives name to the harbour. These islets are remarkable for the colour of their cliffs, and the dark verdure of the turf which covers them.

St. George's Island is about three miles long, and in no place not exceeding half a mile broad. It is the military station of the colony, and was formerly the seat of Government.

The harbour of St. George is one of the most beautiful and secure harbours in the world, being land-locked and sheltered from all winds, with its water as smooth as a mill-pond. The scenery is everywhere pleasing and novel. It certainly realizes the *ne plus ultra* of what may be considered the *beau idéal* of a refuge haven. Tom Moore gives the following short description of the place:—

“ Nothing can be more romantic than the little harbour of St. George. The number of little islets, the singular clearness of the water, and the animated

play of the graceful little boats gliding for ever between the islands, and seeming to sail from one cedar grove into another, form altogether the sweetest miniature of nature that can be imagined—

The morn was lovely, every wave was still,
When the first perfume of a cedar hill
Sweetly awak'd us, and with smiling charms
The fairy harbour woo'd us to its arms."

The entrance to the harbour is narrow, and is protected by Fort Cunningham. To the westward of the town is a hill called Fort George, on which the telegraph is situated.

The streets are extremely narrow, which is a great disadvantage, as the accumulation of much confined air is occasioned thereby, which consequently renders the town unhealthy. The houses are low, scarcely ever exceeding two stories, and are built substantially, of Bermuda stone.

The barracks are situated to the eastward of the town, and are very commodious. The Government have large tanks or reservoirs of water on the north side of the town, for the supply of the Navy.

The roadstead from whence ships proceed to St. George's harbour is called the "Five Fathom," or "Outer Hole;" within this is the "Inner Hole,"

which has a fairway buoy, chequered black and white, marking the entrance to the Narrows, or channel leading to Murray's Anchorage. This buoy is also in the proper direction for crossing the bar, and bears N. by W. from the rock under St. David's Head.

CHAPTER VIII.

AGRICULTURE.

Neglect of agriculture—Ignorance of the Bermuda farmers—Continual spring—Bermuda takes the lead of all the Northern markets, in exporting her farming produce—Fertility of the soil—Proposed agricultural and horticultural Society—Advantages of Societies of scientific men—Proper rotation of crops, &c. &c. —Little attempt to improve stock—The state of horticulture in Bermuda—The funds for carrying on its operations—The business of the Society.

THE great neglect of agriculture in Bermuda is owing principally to the want of competent scientific knowledge, as well as to the lack of facilities for transportation of farming produce. At present the farmers of Bermuda have nothing to rely on but their own experience, which is not derived from careful observation or experiment, but is merely an erroneous theory adopted in ignorance of cause and effect. Such experience is of little value; for, except by chance, no experiment in chemistry or agriculture can lead to any useful result, if the experimenter has not an acquaintance with the materials he employs.

A chemical or analytical establishment might be advantageously connected with an experimental farm, which, besides a trial of different kinds of culture, could also devote some experiments to our own and foreign varieties of plants, and especially to the improvement of the breeds of domestic animals. The right application and employment of manures, with which farmers cannot be acquainted, render the labours of the professional chemist extremely necessary.

The Northern part of the United States, during seven months of the year, is incapable of raising even a blade of grass, whilst Bermuda is decked in her mantle of green the whole year round; the former is dependent on what she raises in the five months for her consumption in twelve, whilst the vegetation of the latter continues during the entire year. We can send potatoes to the New York market till the month of July, and always command good prices; and the same may be said of every other vegetable product. In fact, Bermuda takes the lead of all the northern markets, since she can export her farming produce earlier in the season.

Until the arrival of Governor Reid, in 1839, the plough, the harrow, or other common implements of husbandry, were hardly known; and although he

accomplished a great deal, yet he only partially succeeded in removing the absurd dislike entertained to an occupation which had for a long series of years been superseded exclusively by maritime pursuits. The descendants of the early settlers appear to have gradually lost much of the agricultural knowledge of their forefathers.

Even now, a few patches only have been subjected to cultivation; but such is the productiveness of the soil, that the exports of the colony are surprisingly great.

It is important that not only the attention of the Bermuda parliament and of the community, but more especially that of our merchants, should be directed to this invaluable colony; for, if its resources were once known, and its capabilities fully examined and recognized, I have no doubt but that in a short time it would become a very wealthy settlement.

If the valleys and other places sheltered from the wind were to be planted with banana, plantain, and cassava trees, and the open level land with potatoes, yams, eddoes, corn, and pulse (especially pigeon pease), and a sufficient number of cattle were kept to provide manure, though it may seem incredible, it is nevertheless true, that the island alone, without any foreign assistance, could, in seasonable years, produce

a sufficiency of such food to maintain more than the present number of its inhabitants.

The great fertility and prodigious growth of vegetables in warm climates, when compared with the northern parts of the world, is almost incredible; at least, it will appear to be so to those who are unacquainted with the nature of vegetation.

The advantages arising from a number of persons uniting themselves as a society, for the purpose of carrying forward an undertaking, are now so generally acknowledged, that to detail them appears almost superfluous. Not only must the experience and knowledge of an isolated individual be far less than that of a body of men, but his means for making experiments and conducting necessary operations, must be proportionably more circumscribed. A body of men engaged in the same pursuits form a joint stock of their information and experience, and thereby put every individual in possession of the sum total acquired by them all. Even the mistakes and miscarriages of its members, when recorded, prove a source of advantage to the body, while the labours of every one communicate new energy to his associates, and thus produce exertions which never would have been made had they continued in their individual capacity instead of uniting as a body. Men of

enlarged minds have been long convinced of the great advantages to be derived from societies of scientific men, and have occasionally recommended them; yet scarcely a society was found in England before the year 1640. Since the commencement of the last century, however, these advantages have been more and more developed, so that there is scarcely an object relating either to religion, to science, or to the promotion of arts and manufactures, which is not carried forward by a society formed for that express purpose.

Among other objects, agriculture has, for some years, been greatly promoted by societies, formed with that view in England and other countries. The benefits which have already arisen from them are almost incalculable, and the prospects opened by their present labours are of the most encouraging nature.

The capabilities of the soil to enrich a nation to an almost indefinite extent have been clearly demonstrated by their reports.

An agricultural society, among other things, would pay close attention to the improvement of land, by encouraging a superior mode of cultivation, by ascertaining the best kind of manure, and the best method of applying it—by encouraging neat

workmanship, by drainage, embankments, and proper rotation of crops, by a prudent management of stock, and by other methods which their united experience might suggest.

In many parts of Bermuda the same crop is invariably raised, year after year, on the same ground; and if any alteration is made, it depends more upon the kind of seed the farmer happens to have by him than upon the nature of the land, or upon his wish to improve it. It is probable that the distinction between those crops which improve, and those which deteriorate the soil, is totally unknown in Bermuda, and that a scientific rotation of crops is a subject to which all cultivators are strangers. The same may be said of manure, the greater part of which is generally consumed for fuel, without any idea of its value to enrich the soil, or of the quantity which ought to be used to produce the greatest effect.

Another object to be pursued by an agricultural society is, the introduction of new and useful plants. That there are great numbers of plants suited to the soil and climate of Bermuda, besides those already cultivated, no one will deny. The great and increasing demand made by the arts and manufactures upon the produce of the soil, for particular

productions, is such as to require a variety of plants, suited to every soil, and calculated to furnish crops for all sorts of lands ; and it only requires the united efforts of public-spirited men to bring such articles to notice, and encourage their cultivation.

Very little attempt to improve stock appears ever to have taken place in Bermuda ; everything being left almost wholly to nature. There is, however, every reason to think, that the breed of horses, cows, sheep, goats, swine, and every other useful animal, might be improved as effectually as it has been in other countries, if proper means were only employed to accomplish it. The quantity of milk in cows might, undoubtedly, be increased ; a stronger and more useful race of cattle, both for draught and burden, might be gradually introduced : in short, everything might be expected from persevering attempts to improve those animals which come under the denomination of stock, whether intended for labour, the dairy, or for food. This, then, would form a proper object to call forth the exertions of an agricultural society.

It is also to be lamented that the state of horticulture in Bermuda is almost as low as that of agriculture ; so that, except in the gardens of a few Europeans, who procure a limited number of

articles for the table, there is nothing to be met with except a few products of the most inferior kind. All that is seen of orchards, amounts to no more than clumps of orange-trees, crowded together without judgment, and in which the quality of the fruit is but little consulted.

The improvement of fruit is almost neglected; in fact everything which can contribute to furnish the table with wholesome and agreeable vegetables, or fine fruit, is yet to be commenced; not to mention the fact that ornamental gardening is scarcely known. The introduction of the potato, and more recently of the strawberry, is sufficient to show that the attempts of isolated individuals have not been in vain. How much more, then, might be accomplished by the joint efforts of a number of persons zealously engaged in the same pursuit?

By an agricultural society, premiums could be given to deserving individuals, as a reward for such operations as might be laid down in its rules. And as the only way by which improvements may be communicated, and modes of culture made known, is by publishing reports of the proceedings of societies, and letters from individuals, describing successful or unsuccessful practice, it would be necessary that such a society should publish its reports at stated periods.

It seems highly desirable, therefore, that a society should be formed in Bermuda for the encouragement of both agriculture and horticulture. The funds requisite for carrying on its operations might easily be furnished, by each member subscribing 4*s.* quarterly, and any gentleman subscribing 5*l.* might be a member for life.

The business of the society might be conducted by a president, two vice-presidents, and a committee, to be chosen annually; each member might pay, on his admission, a sum of not less than 20*s.*

It is from a sense of the importance of this subject to the future welfare of Bermuda, that the author has thus taken the liberty to recommend it to the consideration of gentlemen who reside in various parts of the colony, without whose cordial co-operation nothing of this nature can ever be attempted. There is no doubt, that the example which England sets will not be lost upon the colonies. The era is grand and unparalleled in British history. The highest nobility lead the way to a new national glory—the glory of the perfection of agriculture! The Dukes of Richmond, Rutland, Portland, Buccleugh, and Sutherland; Lords Spencer, Ducie, &c. &c., are at the head of the movement, and identify themselves with that noble profession, “upon

which the welfare and development of the whole human species, the richness of states, and all commerce, depend." Associations of all denominations, men of all vocations, labour to diffuse truth and to combat error and prejudice, and scientific contributions are welcomed to England, from whatever quarter they proceed.

CHAPTER IX.

PRODUCTIONS OF THE SOIL.

The flax plants—The opuntia—Inexhaustible source of wealth—Negligence of the Colonial government in not furthering scientific objects—Local prejudices—Agriculture—Soil of the Bermudas—Practical directions in agriculture and horticulture, with a calendar, &c. &c.—Agricultural associations of England and Scotland—The Home Government—Sympathy from England.

THE productions of the soil are varied. The wheats of the south of Europe, Egypt, and Africa, could hardly fail in Bermuda. The American wheat has been tried with success.

Excellent potatoes are easily cultivated; the sweet potato, of course, yields abundantly. Arrowroot, cassava, yams, yield abundant crops; the profit would be great, if a little agricultural and mechanical skill were employed to abridge the labour required in the culture and preparation of the soil.

Ginger and tobacco are easily cultivated; and vegetable oils abound.

The flax plants are the most important of all the neglected products of Bermuda. The banana, the plantain, Spanish dagger, the okra, and the wild aloe, all produce flax and hemp of different textures; but no steady or systematic attempt has been made to turn them to account. The chief difficulty lies in separating the vegetable matter from the flax; this might easily be done, as it is elsewhere, by mechanical pressure, and the cleansing be effected by chemical agents.

The cotton raised in Bermuda is accounted very firm and substantial. I feel confident that cloth made from this cotton would almost vie with linen in value.

The opuntia, or prickly pear, grows luxuriantly in the most barren places of the Island. It is not turned to the same account by the cultivation of the cochineal insect on it, as in Teneriffe, from whence upwards of 60,000*l.* worth of this valuable dye is annually exported.

Drugs are here in great abundance. The fruits could be cultivated with much advantage; the strawberry, the grape, the fig, the guava, the shaddock, and many other tropical fruits, ripen without assistance from art. Many European vegetables grow to perfection.

Such a soil and climate, with good husbandry, would furnish an inexhaustible source of wealth. Yet with all these natural advantages, little or nothing, comparatively speaking, is done in the way of cultivation. This is owing to the negligence of the Colonial government in not identifying itself with scientific objects, and in leaving the promotion of science entirely to the efforts of individuals; which is quite preposterous. Unfortunately, jealousies have arisen between the commercial and agricultural interests, and local prejudices find their way into the halls of legislation. To these evils have been added endless party bickerings, and a thirst for places of ease, emolument, and power. The advocates for general and practical enterprise have been swept away in the overwhelming current of agitation, and the energies of the most useful men have been paralyzed before the altar of popular bigotry.

The soil of the Bermudas is, in general, rich and productive, yielding the labourer three crops a year; the arable ground is of such an excellent mould, that it contains neither flint, pebbles, nor stones, sufficiently hard to grind knives.

There are five kinds of soil in the colony, viz :—

1st. The light red soil.

2nd. The red, or clayey soil.

3rd. The light sandy soil.

4th. The dark or calcareous soil.

5th. The peaty soil.

The light red soil is well suited for Irish and sweet potatoes, and for every kind of garden vegetables.

The red or clayey soil is best adapted for the growth of arrowroot, onions, and Indian corn. Both sweet and Irish potatoes, as well as most kinds of garden vegetables, will thrive in it; but the lighter soils will grow the former much better.

The light sandy soil is to be found chiefly in the parishes of Southampton and Sandy. Irish and sweet potatoes, indeed all kinds of vegetables, grow abundantly, and come to high perfection here. With plenty of manure and careful culture, this soil will easily produce three good crops in a year.

The dark or calcareous soil is mostly to be found on the hill-sides. It is of a blackish colour, and is favourable to the growth of oats, turnips, and sweet potatoes.

The peaty soil, or reclaimed marshes, are best calculated for Indian corn, oats, turnips, carrots, clover, and other grasses.

In ascertaining the composition of sterile soils with a view to their improvement, any particular

ingredient which is the cause of their unproductiveness, should be particularly attended to ; if possible, they should be compared with fertile soils in the same neighbourhood, and in similar situations, as the difference of the composition may, in many cases, indicate the most proper methods of improvement. If, on washing a sterile soil, it is found to contain the salt of iron, or any acid matter, it may be ameliorated by the application of quicklime.

Soils too abundant in sand are benefited by the use of clay, marl, or vegetable matter. A deficiency of vegetable or animal matter must be supplied by manure. An excess of vegetable matter is to be removed by burning, or to be remedied by the application of earthy materials. The improvement of peats, or bogs, or marsh lands, must be preceded by drainage ; stagnant water being injurious to all the nutritive classes of plants. Soft black peats, when drained, are often made productive by the mere application of sand or clay as a top-dressing. When peats are acid, or contain ferruginous salts, calcareous matter is absolutely necessary in bringing them into cultivation. When they abound in the branches and roots of trees, or when their surface entirely consists of living vegetables, the wood or the vegetables must either be carried

off, or be destroyed by burning. In the last case, their ashes afford earthy ingredients, fitted to improve the texture of the peat.

The labour of improving the texture or constitution of the soil is repaid by a great permanent advantage; less manure is required, and its fertility insured. Capital laid out in this way secures for ever the productiveness, and, consequently, the value of the land.

The author deems it important to give the following practical directions in agriculture and horticulture, with a calendar, showing the work necessary to be done every month throughout the year, for the cultivation of vegetables and fruit-trees, &c.—the whole adapted to the climate of Bermuda.

MONTHLY DIRECTIONS.

WORK FOR JANUARY.

Sow most kinds of European seeds, which will thrive in this latitude—the white Dutch or red-top turnip, cabbage, lettuce and salad, onions, Windsor beans, leeks, garlic, celery, parsley, thyme and herbs, wheat, barley, oats, millet, broom corn, endive, spinach, galba seeds for hedges, the seaside grape, yellow lucerne, melilot, clover in pond land, and all grass seeds; a crop of thin corn in sheltered places for grain; carrots.

Plant arrowroot, cassava, onion plants, a full crop, and general crops of Irish potatoes; a few scarlet short-top radish may be put down, with a few lettuce. Plant out tomatoes: they require to be bushed, to keep the fruit from the ground.

Plant out the *Cynara Hortensis*, or globe artichoke, from suckers taken from old plants, or sow the seed in the latter end of January, or at any time in February; asparagus (*Asparagus officinalis*)—(varieties: Gravesend, large white Reading, large Battersea, large green, or giant); borecole or kale (*Brassica oleracea*, &c.)—(varieties: green curled or Scotch, dwarf brown or German, purple fringed, Jerusalem or Buda, Cesarean kale, thousand-headed cabbage); Brussels sprouts (*Brassica oleracea*); broccoli (*Brassica oleracea Italica*)—(varieties: large purple cape, white or cauliflower, sulphur colour cape, early white, early dwarf, branching purple); cauliflower (*Brassica oleracea cotrytis*)—(varieties: early white, late white, hardy red, or purple cauliflower); nasturtium, or sturion (*Tropæolum*); rhubarb (*Rheum*).

Remarks.—During the first part of this month, all the manure should be got on the land, and towards the latter end of the month, onions and potatoes may be planted. If the weather be very

wet, the planting can be delayed for a few days; if fine, commence to dig up arrowroot. The onions should be planted in red soil, made very rich with well-rotted manure. It is necessary to plant them eight inches apart, as shallow as possible, with a little Indian corn between to protect them from the worms, to be cut out as soon as the onions become strong. Irish potatoes can be cultivated here from November till July. They will keep from May till January. So that in Bermuda we can always have potatoes for the table and for planting. The best manner of planting the red potatoes is, after well manuring the land, to place them two feet between the rows, one foot between each set, each set having two eyes. From the first to the tenth of the month is the best time for planting them in light soil, sheltered from the north and west winds, that the plant may get strong before the blight or disease destroy it. The western red is by far the best kind for Bermuda.

Arrowroot should be taken up this month, if the land is required for onions and potatoes; green seaweed is a good manure to dig in whilst taking up the plant.

Carrots may be sown for a late crop. They should be kept free from weeds.

Cabbage.—Plant out the late plants for a crop in May. Keep the ground loose and very free from weeds.

Cauliflower.—This plant, being tender, requires great care to bring it to perfection. To produce early cauliflower, the seed should be sown in a bed of clean rich earth towards the end of January or early in February. When the plants are three or four inches high, they must be pricked out three or four inches apart into another bed, and by the latter end of April they may be transplanted into the ground, and treated in every respect the same as for broccoli.

Broccoli.—The proper time for sowing the seed of purple Cape broccoli is from the tenth to the twenty-fourth of January. It is best to sow the seed in shallow drills, drawn three or four inches apart. In which case, one ounce of seed will occupy a border of about four feet in width by twelve in length, and produce about four thousand strong plants. When the plants are of sufficient size, they should be transplanted into extraordinarily rich ground, which should be previously brought into good condition. This being done, plant them in rows two feet and a half apart, and two feet distant in the rows. As soon as they have taken root, give the ground a deep

hoeing, and repeat this two or three times in the course of their growth, drawing some earth around their stems.

Brussels Sprouts.—The seed may be sown about the middle of January, in the same manner as broccoli, and the plants set out with a dibble early in March. The subsequent treatment must be in every respect as for borecole.

Borecole.—The dwarf curled or finely-fringed sorts are much cultivated in Europe for the table; and the coarse and tall growths are considered profitable for cattle. The thousand-headed cabbage and Cesarean kale grow from three to five feet high, and branch out from the stem, yielding an abundant supply of leaves, and sprout in the winter and spring. The seed may be sown from about the middle of January to the first week in February, and the plants set out in the month of March, in good rich ground. One ounce of good borecole seed will produce about four thousand plants, and may be sown in a border four feet by ten, or thereabouts.

Asparagus.—Asparagus may be raised by sowing the seed in January and the early part of February. One ounce of seed will produce about a thousand plants. The seed may be sown in drills, ten or

twelve inches apart, and covered about an inch with light earth. When the plants are up, they will need a careful hoeing, and if well cultivated and kept free from weeds, they will be large enough to transplant when they are a year old. A plantation of asparagus, if the beds are properly dressed every year, will produce good buds for twenty years or more.

Those who may wish to raise asparagus in large quantities for market should prepare the ground with a plough, and plant two rows in each bed, which may be carried to any length required. If several beds are wanted, they may be planted in single rows four or five feet apart, in order that the plough may be worked freely between them. Frequent ploughing will cause the roots to spread, so as to widen the beds, and the winter dressing may be performed in a great measure with the plough. After the asparagus is cut, the ground between the beds may be ploughed, and planted with cabbage, potatoes, or any other vegetable usually cultivated in rows.

Artichoke.—The globe artichoke, which produces large globular heads, is best for general culture, the heads being considerably larger, and the eatable parts more thick and plump. It may be raised from seed, or young suckers taken from old plants. The most

likely way to obtain a supply of artichokes from seed is to sow the seed in the latter end of January or at any time in February, in a bed of good rich earth, or it may be planted in drills one inch in depth, and about twelve inches apart. The ground should be light and moist, not such as is apt to become bound up by heat, or that in consequence of containing too large a proportion of sand is liable to become violently hot in summer, for this is extremely injurious to these plants. After the plants are up they should be kept free from weeds, and the earth often loosened around them. The business of transplanting them may be done in cloudy or wet weather, at any time after the plants are from nine to twelve inches high. After having trenched the ground well with rotten manure, take up the plants, shorten their tap-roots a little, and dress their leaves; plant them with a dibble, in rows five feet asunder and two feet from plant to plant, leaving part of their green tops above ground. Take off the side suckers, or small artichokes, when they are about the size of hen's eggs. These meet with a ready sale in the market, and the principle heads that are left are always larger and more handsome. The maturity of a full-grown artichoke is apparent by the opening of the scales, and it should always be cut off before the flower appears in the

centre ; the stem should be cut close to the ground at the same time. Artichokes are esteemed a luxury by epicures. To have them in perfection they should be thrown into cold water as soon as gathered, and after having been soaked and well washed, put into the boiler when the water is hot, with a little salt, and kept boiling until tender, which generally requires, for full grown artichokes, from an hour and a half to two hours. When taken up, drain and trim them ; then serve them up with melted butter, pepper, salt, and such other condiments as may best suit the palate.

Nasturtium.—The seed should be sown in January or early in February, in drills about an inch deep, near fences or pales ; and trellises should be constructed, on which they can climb and have support, for they will always be more productive in this way than when suffered to trail on the ground. The berries, if gathered while green, and pickled in vinegar, make a good substitute for capers, and are used in melted butter, with boiled mutton, &c.

Rhubarb is a genus of exotic plants, comprising seven species, of which the following are the principal : 1st, *Rhoponticum*, or common rhubarb, a native of Thrace and Syria, has long been cultivated in British gardens for the footstalks of the leaves,

which are frequently used in pies and tarts. 2nd, *Rheum undulatum* is also cultivated for the same use. 3rd, the *Palmatum*, or true officinal rhubarb, is a native of China and the East Indies, whence its culture has been introduced into Europe; it produces a thick fleshy root, externally yellowish brown, but internally of a bright yellow colour, streaked with red veins. The several kinds of rhubarb may be propagated by offsets taken from the roots early in January, or from seed sown late in September, or in January or February, in drills one inch deep and a foot apart. The indispensable points to the production of good roots of the *palmatum* are depth and richness of soil, which should be well pulverized before the plants are set out. Prepare beds of fine mould eighteen inches deep; in these put in the plants from the seed-bed, ten or twelve inches apart; this must be done when they have attained the height of four or five inches, and have thrown out as many leaves. Those who cultivate the *palmatum* for the sake of the roots should dig the ground two or three spades deep, and place the plants three feet apart every way. The roots of the *palmatum* must not be taken up until six or seven years old. The stalks of the other kinds may be cut every spring, or as soon as the leaves are expanded. After the roots of the

palmatum have been well washed, and the small fibres cut off, they are to be cut transversely into pieces about two inches thick, and dried on boards, turning them several times a day, in order to prevent the escape of the yellow juice, on which its medicinal qualities depend. In four or five days they may be strung upon strings, and suspended in a shady but airy and dry situation, and in two months afterwards they will be fit for the market.

Pot Herbs.—Plant out and keep clean.

Peas.—Plant dwarf marrowfat in sheltered places for a crop in May; also tomatoes in rich light soil, four feet apart, and keep very clean.

Beans.—Plant six-week and Windsor in rich soil.

Swedish turnip for a crop in May.

WORK FOR FEBRUARY.

Lose no time now in planting the onions and potatoes that are not already in the ground; dig up arrowroot; plant a little (thin) white Indian corn in sheltered places. Sow all sorts of French and Lima beans; plant sweet potatoes in hot beds for springers; sow carrots for a late crop; sow cucumbers and melons for an early crop, and pumpkin seeds; sow barley and oats; lay in the points of pumpkin vines, to transplant in March and April; gourd seed, arrow-

root, cassava, white beans and peas, celery (*Apium graveolens*)—(varieties, white solid, red-coloured solid, new white lion's paw, North's red giant); plant the Jerusalem artichoke (*Helianthus tuberosum*); sow the parsnip seed (*Pastinaca sativa*)—varieties, long Guernsey cup, large Dutch, or common.

Remarks.—This month is a busy time with the gardener; it is the season for taking up arrowroot and planting out the roots, getting down Irish potatoes, and planting a few sweet potatoes for springers. Potatoes raised from Bermuda seed, if shipped to New York this month, will bring a good price. Onions planted this month in good red soil will be ripe as early as those planted last month in light soil.

Turnips.—The white globe can be sown in waste lands.

Beans.—White and six-week beans can be planted.

Cabbage.—A few early York can be planted out. Those that are planted must be kept clean and moulded, and a little manure be placed among them.

Oats.—In all waste land sow oats for fodder or crop.

Indian Corn.—Plant the thin white for an early crop.

Carrots.—Sow the early horn for a late crop.

Salad.—Lettuce in warm places can be sown: likewise radish.

Sweet Potatoes may be raised by means of a moderate hotbed, in which they should be planted whole early in February, three or four inches deep, and about the same distance apart. In about a month they will throw up sprouts. When these are three inches above ground, part them off from the potato, which if suffered to remain will produce more sprouts for a successive planting; transplant them into rich light soil, in rows four feet apart, and the plants about a foot apart in the rows, or in hills four feet apart. Keep them clear of weeds until the vines begin to cover the ground; after which they will grow freely. In sandy ground, it is well to put a shovelful of rotten manure to each plant. A moderate hotbed five feet square, with half a peck of good sound sweet potatoes placed therein early in the month of April, will send forth a succession of sprouts in May and June, which if planted and managed as directed, will yield about fifteen bushels of good roots.

Pumpkin.—(*Cucurbita pepo*)—(varieties, finest Chinese or family; mammoth or Spanish, Connecticut field, white bell): This plant is highly deserving of cultivation, particularly in new settlements; the

large sorts are profitable for cattle, as some of the mammoth tribe have been known to weigh upwards of two hundred pounds each. The other kinds are also very productive, and may be raised on any waste land, provided it will admit of digging small spots of the dimensions of one or two feet—every ten or twelve feet—for the hills, and the residue of the ground be unencumbered for the plants to run on. They are generally raised on cultivated farms, between hills of Indian corn, and may be planted in the garden or open field, in February and March, in hills eight or ten feet apart, with four seeds in each hill. The finest quality of pumpkins are known to make good pies, and may also, after being boiled, be worked up with wheaten flour into bread, for which purpose they are fully equal to Indian meal.

Celery (*Apium graveolens*).—This vegetable, so much esteemed as a salad, is known in its wild state by the name of swallowage. The seed for a general crop may be sown the last week in February, or early in March, in rich, mellow ground. Some sow the seed broadcast, but the plants will be much stouter if raised in drills. The drills may be half an inch deep, and six inches apart, so that a small hoe can be worked between the rows; and, if properly attended to, every ounce

of seed so sown will produce ten thousand strong plants or more. Previous to planting, trim the plants, by cutting off the long straggling leaves, and also the ends of the roots. Let them be planted with a dibble, in single rows, along the middle of each trench, five or six inches between plant and plant. The main crops may be planted in the following manner:—Lay out the ground into beds four feet wide, with alleys between, three feet; dig the beds a spade deep, throwing the earth on the alleys: when done, lay four or five inches of well-rotted manure all over the bottom of the beds, dig and incorporate it with the loose earth, and cover the whole with an inch or two of earth from the alleys. Plant four rows in each bed, at equal distances, and from six to eight inches apart in the rows. The plants must be hoed occasionally, until grown of sufficient size for earthing, which should be performed in fine weather. As the plants progress in growth, repeat the earthing every two weeks, at which time care should be taken to gather up all the leaves neatly, and not to bury the hearts of the plants. When they are grown two feet high, and well blanched, they are fit for the table.

Jerusalem Artichoke.—This plant is a native of America, the tubers of which are generally abundant,

and are considered a fine flavoured and nutritious food, when boiled and mashed with butter. They may be easily propagated by cutting the roots into sets, with two eyes in each, and planting them in the same manner as potatoes, in February and March. To have them in perfection, they should be hoed frequently, and the ground kept loose around them.

Parsnip.—Parsnip seed may be planted from the middle of February to the middle of March, in drills one inch deep and fourteen inches apart. Sow the seed thick along the drills, at the rate of five or six pounds per acre, and rake them in evenly. When the plants are two or three inches high, thin them to the distance of six or eight inches in the rows.

WORK FOR MARCH.

(First Part.)—Sow melons, pumpkins, squashes, cucumbers, okras, pigeon-peas for forage, oats, cotton, barley, Southern Indian-corn, and round peas for forage, buckwheat, lucerne, turnips, white-beans, spinach, parsley, tomatoes, hay-seeds, peppers, orange-seed. Plant arrowroot, tous-les-mois, Guinea-grass, aloes, vine-cuttings, cabbage, onions, leeks, garlic, salad, cassava-trees, sweet potatoes in hot-beds.

(Latter part.)—Plant tropical seeds, flower seeds, melons, pumpkins, squashes, cucumbers, okras, cotton, tobacco, flax, almonds, figs, raisins, dates, palmetto-nuts, rape, olives, flint-corn for crop, sweet-corn for domestic use. Plant fruit and other trees, and oleander cuttings for hedges. Sow salsify (*Tragopogon porrifolius*.)

Remarks.—Potatoes and onions must be all planted, or no crop can be expected; likewise sweet potatoes and Indian-corn—the thin early (corn) for fodder, the flint late; if for a crop, let the hills be three feet apart each way, and not more than two or three grains in a hill; it can be planted between the rows of the Irish potatoes, as when the potatoes are taken up it cleans and moulds the corn; all the onions should be planted by the middle of the month. A crop of white turnips does well in this month; they may be shipped to New York in barrels, to supply that market before their own crop comes in. Varieties of the turnip are the early garden stone, early white Dutch, large English Norfolk, long tankard, or Hanover, early snowball, early red-top, strap-leaved red-top, early green-top, yellow Aberdeen, long white, white flat or globe, yellow Maltese, yellow stone, Dale's yellow hybrid, long yellow, Russia, Swedish, or *Ruta boga*. This is a whole-

some and useful plant, both for man and beast, and deserving of cultivation. But when we further recollect that it enables the agriculturist to reclaim and cultivate land which, without its aid, would remain in a hopeless state of natural barrenness; that it leaves the land clean and in fine condition, and also insures a good crop of barley and of clover; and that clover is found a most excellent preparation for wheat; it will appear that the subsequent advantages derived from a crop of turnips must infinitely exceed its estimated value as fodder for cattle. For general crops, it will be better to have the ground manured with compost containing a considerable proportion of coal, wood, peat, or soaper's ashes. Ground that has been well manured, for preceding crops, and also ground fresh broken up, will do well for turnips. To have turnips in perfection, they should be hoed in about a month after they are sown, or by the time the plants have spread to a circle of about four inches, and again about a month from the first hoeing, leaving them from six to nine inches apart. They will yield the cultivator more profit when treated in this way than when left to nature, as is too frequently done.

Three crops of turnips may be obtained in one year, by sowing seed for the *first* crop early in

January, for the *second* crop in April, and for the *third* in September. By sowing the seed in drills, greater facilities are afforded of hoeing between the rows, which more than compensates for the extra labour.

Salsify (*Tragopogon porrifolius*).—This plant requires the same kind of soil and management as carrots and parsnips.

In England the tops are considered excellent food when boiled tender, and served up with poached eggs and melted butter. They are by some considered salutary for persons inclined to consumption; and if the roots are eaten when attainable, they may, perhaps, answer a still better purpose, and even the liquor in which they are boiled may possess some of the most valuable properties of the plant.

Palmetto-tops should be got for onion-baskets.

WORK FOR APRIL.

Plant flint corn early in this month for crop, corn for fodder, and oats, Guinea-grass, white beans, a few melons and cucumbers, white turnip, radish, arrowroot, any kind of fruit and other trees, sweet potatoes for a general crop, and Guinea-corn.

Remarks.—The work for this month is mostly in cleaning onions and potatoes; putting down sweet

potatoes, which should be completed before the end of the month. The fruit-vines will require care, or the worm will take them.

Arrowroot.—This is the best month for planting it. It does well planted between the Irish potatoes in good red soil.

Irish potatoes.—Mould and clean them. Begin to get the barrels ready to put them in for shipping.

Onions.—Clean and loosen them for the last time; pull up any corn that may have been planted through them, as any that shades them will keep them from heading. The baskets must be soon got in readiness for them.

Sweet potatoes.—Trench into the ground vegetable manure, such as sage-bush, cedar-brush, or seaweed—the latter is the best; you must finish planting them this month.

Turnips.—A few white globe or red-top can be sown in waste land, and will yield a good crop if the weather is favourable.

Fruit vines.—Cucumbers and melons can now be planted, if not already planted. Those that are growing must be freed from weeds, and a little soot or ashes strewn around them.

Tomatoes.—Keep plenty of sage-bushes under the vines as they run. Let the sun get to them as much

as possible to ripen the fruit. Ship some this month if you can. The fruit must not be too ripe to ship—they should be just turning red at the flower end; the packages should be made of laths eighteen inches long, eight inches broad, and six inches deep, which will hold about six dozen, with layers of paper or hay.

Indian corn.—Should be planted for fodder and crop in spare land.

Guinea-corn.—The seeds should be sown in beds for transplanting.

Oats.—Plant all spare ground for fodder or manure.

Plant cuttings of fruit-trees; transplant flowers and shrubs.

Guinea-grass.—Transplant round the borders.

WORK FOR MAY.

Sow pigeon-peas, buckwheat, Guinea corn, Lima beans, tomatoes, peppers, orange-seeds, flower-seeds, melons, pumpkins, squashes, cucumbers, okras, cotton, almonds, figs, raisins, dates, palmetto-nuts, olives, black-eyed-peas, and other tropical seeds. Plant arrowroot, tous-les-mois, aloes, trees, oleander and tamarisk cuttings for shelter, ground-nuts, eddoes,

melons, cucumbers and pumpkins from seed-beds, yams, and early sweet potato slips.

Remarks.—The main work for this month will be in pulling onions, digging potatoes, and shipping them. During the first part of the month all the packages for the onions and potatoes should be got ready; all the sweet potato slips and springers should be put down that can be obtained.

Arrowroot.—Finish planting. This is a very good month for it.

Onions.—Should be kept very clean from weeds; the early ones will be fit to pull from about the 20th to the 25th; care should be taken to pull them up as soon as the stalk falls, as they will not keep long if allowed to stand in the ground after they are ripe.

Irish Potatoes.—The early planted ones will begin to ripen, and should be taken up, but not exposed to the sun; pick out the very small ones for the pigs, the second size put away for seed, the remainder ship, eat, or keep, as you may deem best.

Peas.—Plant a few bird's-eye peas in the Irish potato ground for an early crop, fodder, or manure for slips.

Pumpkins.—Plant the slips in all waste land, side of hills, &c. The slip will yield a better crop than the seed.

Turnips.—A few white globe may be sown, if the weather is wet.

Guinea-corn should be planted out in all spare land; it will grow in any soil, and is a valuable crop for fodder.

Sweet potatoes.—Put down all the springers and slips that you can obtain; they will give a good crop in September. Plant them on ridges, as they do better—the ridges eighteen inches apart, the slip one foot.

Melons.—Clean and trench the vines as they run, and nip off the tops of the shoots, which will make them spread and put out more fruit; dust them over with a little soot and ashes.

Bud and engraft sweet orange or healthy young Seville orange or lemon trees. Keep the roots continually watered, and the grafted buds moist in dry weather.

WORK FOR JUNE.

Plant early crops, such as sweet potato slips and Nigel's bird's-eye peas for a full crop. Plant oats, Guinea-corn, in rich ground, and not too thick; collect grass-seeds as they ripen; bud orange and other trees; transplant arrowroot.

Remarks.—This is a busy time in getting up the

potatoes and onions, stowing away those intended to be kept, and shipping the others; if rain, plant slips and peas; trench the fruit vines.

Arrowroot.—Clean and transplant, if too thick.

Irish Potatoes should be all taken up, and others put away, to keep or to be shipped. If they lie in the ground long after they are ripe, they will not be fit to eat.

Onions should be all taken up; those not shipped should be put up in bunches and hung in a dry place; they will keep till October quite sound, and then fetch a good price.

Sweet potatoes.—Plant the slips fifteen or eighteen inches apart, to give them room to grow.

Pumpkins.—Trench and manure the vines as they run, pick' off the tip end of the slip when about two yards long.

Peas.—Plant bird's-eye peas for a full crop in waste land. This is a valuable but neglected crop, as they can be planted in any soil, will yield a good return in peas, which will sell readily, give abundance of fodder for cattle, and employ ground which would otherwise be full of weeds.

Melons.—Clean the vines, as the fruit will begin to ripen. Do not plant cucumbers and melons in the same land, or the bees will spoil both.

Guinea-corn.—Finish planting out in all spare land for fodder in September and October.

WORK FOR JULY.

Plant bird's-eye peas for a full crop or for fodder ; potato and pumpkin slips.

Remarks.—Not much doing, except in planting sweet potato slips, which should be planted in rainy weather for full crops. Clean Guinea-grass and corn ; clear up the waste land ; remove the cattle out of the sun ; keep the manure-pits covered, to protect them from the sun ; strew the manure over with salt or lime occasionally, to preserve the gases and to kill the insects ; clean the arrowroot, and put the weeds on the manure, as they protect it from the sun. The pigsty and cowsheds should have between two or three inches of soil or sand laid over the bottom, which ought to be lower than the surrounding ground, and then bedded up with the refuse of the garden, sage-bushes, sea-weed, or any such thing, and be allowed to lie two or three months without cleaning, as this, with stable manure, makes the best compost.

In milking cows great care should be taken to milk them quite dry, or the best cow will soon be ruined. A calf to be made fat should be tied up

when two days old in a shed, with as little light as possible, kept very clean and warm, and allowed to go to the cow but two or three times a day.

WORK FOR AUGUST.

Plant sweet potato slips, black-eye peas for fodder or green manure ; plant cabbage slips ; sow Bermuda carrot-seed for carrots at Christmas. Sow turnips, oats ; plant Irish potatoes.

Remarks.—We may in general expect rain this month, and should take advantage of it to put down all the slips. Sow oats for early fodder, Irish potatoes (Bermuda seed), and dig any land for oats and potatoes for next month.

Irish potatoes.—Pick them over for seed, and let them be in good order for planting. In wet weather plant some for a crop in November.

Onions.—Have the seed in good order for planting next month.

Carrots.—Sow some fresh seed of early horn for an early crop ; old seed will not answer.

Cabbage.—Sow a little early York or sugar-loaf.

Turnips.—Sow a little white globe or red-top ; old seed will come up.

WORK FOR SEPTEMBER.

Plant most European plants. Collect grasses of all kinds as they ripen. Sow tomatoes, carrots, turnips, beets, cabbage, lettuce, marrowfat peas, French beans, and generally all the seeds of the European garden. For forage, sow barley, oats, lucerne, rape, buckwheat, broom, barn millets. Plant aloes, cabbage slips, and onions for seed. Sow radish and other kinds of salad in very rich land, to be watered in dry weather. Sow mangel-wurtzel.

Remarks.—All the sweet potato slips should be planted this month; the onion beds manured and dug; the ground for garden seed be made ready, and good seed should be sown in seasonable weather. The ground for onion seed should be manured at least one month before the seed is sown, and dug twice. Carrots should be sown this month, if possible, as they thrive well in warm weather.

Arrowroot.—Weed for the last time.

Sweet potatoes.—Plant slips all the month; cut the slips from the old stem, as they are stronger and will give a better crop.

Irish Potatoes.—Plant all the Bermuda seed you can get; rather closer than in January; cut all that are long enough; don't plant the very small ones.

Oats.—Plant in all spare ground; they will keep the weeds down.

Turnips.—Sow early Dutch, red-top, and Swedish, not too thick, in light soil, well manured.

Cabbage.—Sow early York, early drumhead, large late drumhead.

Carrots.—Sow long orange for a late crop; early horn for an early crop. Sow in light soil; they are the best winter food for cattle.

Beet (*Beta vulgaris*)—(varieties: early blood turnip, rooted; early long blood; extra dark blood; yellow turnip, rooted; early scarcity; mangel-wurtzel; French sugar, or Silesia; Sir John Sinclair's).—The mangel-wurtzel and sugar beets are cultivated for cattle. Domestic animals eat the leaves and roots with great avidity; they are excellent food for swine, and also for milch cows, and possess the quality of making them give a large quantity of the best flavoured milk. The roots are equally fit for oxen and horses, after being cut up into small pieces and mixed with cut straw, hay, or other dry feed; and an acre of good, rich, loamy soil has been known to yield two thousand bushels of beet-roots, some of which weighed from fifteen to twenty pounds each. To produce such enormously large roots, they should be cultivated in drills from two to three feet apart,

and the plants thinned to ten or twelve inches in the rows. It is believed, however, that moderate-sized roots contain proportionally more saccharine matter than extra large roots, and that twenty tons, or about seven hundred bushels, are a very profitable crop for an acre of land, and would be amply sufficient to feed ten cows for three or four months of the year.

Draw drills a foot apart, and from one to two inches deep. Drop the seed along the drills, one or two inches from each other, and cover them with earth. When the plants are up and strong, thin them to the distance of six or eight inches from each other in the rows. The ground should be afterwards hoed deep round the plants, and kept free from weeds. If the planting of beet-seed for general crops be delayed until September, the roots will be much larger and better than those from earlier planting. The most suitable ground for beets is that which has been well manured for previous crops, and requires no fresh manure, provided it be well pulverized. It may be necessary to add, that one pound of beet-seed will measure about two quarts, and as each capsule contains four or five small seed, thinning out the surplus plants is indispensable to the production of good roots. Soak the seed twenty-four hours in water previous to sowing it.

WORK FOR OCTOBER.

Sow all kinds of European seeds, which will thrive in this latitude—tomatoes, carrots, turnips, beets, cabbage, lettuce, and salad, marrowfat peas, French beans, Lima beans, onions, leeks, garlic, celery, thyme, and pot-herbs, parsley, oats, rape, vetches, lucerne, mangel-wurtzel, buckwheat, millet, broom corn. Plant onion bulbs for seed, cabbage slips, aloes, Irish potatoes of Bermuda seed, seedlings of all kinds which require transplanting, trees of every kind, pond grass from cuttings where meadows are to be formed, pumpkin slips, cuttings of the oleander and the tamarisk, and of all trees which grow from cuttings. The shores of the Bermuda islands should be belted with the tamarisk for shelter. Collect native grasses, grasses of all kinds as they ripen. White grass, now everywhere ripening, should be carefully saved to be resown on tilled ground in the spring. Plant sweet potato slips in sheltered places for stock.

Trees, &c.—Prune and train grape vines, peach, and other fruit-trees; open the soil around the root, and manures.

Remarks.—Peas and beans should be planted three feet apart in the rows; the Windsor beans

should be topped as soon as they begin to flower, or they will not hold. Seed beds should not be more than three feet broad, on account of cleaning them; cabbage plants should be set out in a second bed before planting; Swedish turnips should be set out two feet apart between the rows; one ounce of good cabbage or Swedish turnip seed will yield, with care, 1,000 plants; full crops of onion seed should be put down this month—a bottle of good onion seed contains 10,000 seeds, and will yield, with care, from 20,000 to 30,000 lbs.; the beds should be rich soil; one bottle will plant, on an average, half an acre. Cabbage and Swedish turnips delight in green or fresh manure just out of the stable or cow-shed, which should be dug into the ground immediately before planting. Carrots should be sown after cabbage, without manure, as they do not like fresh manure, it makes them strong, and causes the roots to spread. Oats should be sown in spare land, as they will be off in time for full crops of Irish potatoes in February, and will enrich the land. This is a good month to sow tomatoes, an ounce of seed will give at least 1,000 good plants, if the seed is new. They suffer much when too thick in the beds, so that the sooner they are transplanted, three or four inches apart, the better, as

it also improves them when transplanted finally in the open field.

For the planting of the several kinds of seeds see last month.

WORK FOR NOVEMBER.

Same as October. Sow galba seeds for hedges, palmetto nuts, canary bird seed, almonds, a few Irish potatoes can be planted, but not for a full crop; barley and oats for fodder. Sow all kinds of European seeds, which thrive in these latitudes. Sow tomatoes, gather them in April as they become a little pale, and they will then ripen in about ten days for the New York market. Sow onions, tobacco, and wheat, until the middle of next month, for good full crops. Plant out strong plants of strawberries to produce next spring. Sow oats, and continue as in September, with carrots, turnips, &c.

Remarks.—The Swedish turnips not previously set out, ought now to be; the cabbage plants are ready to set out from the second bed, they require strong ground, and should be placed three feet apart in the row, and one foot between the plant, to bring them to perfection; they must be kept very clean. Seaweed may now be expected to accumulate in the bays; it should be preserved as fresh as possible

and either dug into the land green, or made into a large heap and covered with soil; coarse baysand is good for very stiff land.

Onions.—Get the seed down by the tenth if possible, cover the seed with new soil, it will grow faster; clean those set out for seed.

Carrots.—Clean and thin those sown.

Cabbage.—Set out the plants, the early two feet between the rows, one foot between the plants. The late kinds three feet between the rows.

Tomatoes.—If not all sown in last month, sow early this.

Irish potatoes.—If any Bermuda seed, put it down for a crop in February.

Oats.—Plant in all spare land; also barley and wheat.

WORK FOR DECEMBER.

Plant wheat, barley, and oats, Windsor beans, garden peas, white Dutch turnip; plant out cabbage plants, sow onion seed, and a few Irish potatoes in sheltered places. This is a good month to sow cucumbers for the New York market; they should be well manured to support them against the weather; many people have them growing well at this season; they require to be packed in damp rushes or straw

to keep them plump; they will keep, thus packed, three weeks. Peas may also be sown in this month, for the New York market in April; they will remain in good order for ten days; the packages should be small, to prevent fermentation.

Remarks.—Should the manure pit or pen be composed of long coarse materials, it will be necessary to turn it over, to cause it to take fresh ferment, and thereby decompose it the better for the immediate use of vegetables; it may also be requisite to notice it, when sand intermixed in turning will also have good effect in rotting it; the manure, in turning, must be shaken up lightly, and not trod upon afterwards, to allow the air to penetrate and the fermentation to pass through the heap: dig in rough manure, as such can best be spared, around the roots of orange-trees to the full extent of the branches, and also the grape-vines; if salt brine, or bones broken small, can be procured, they will be serviceable to both; the grape-vine will bear the greatest proportion of salt without injury. Tomatoes planted out this month will yield fruit, with care, in March; they must be bushed to keep the fruit from the ground; four feet six inches between the rows, and about three feet on the rows, is probably a sufficient distance for them to be planted. They

will grow in soil of any colour, with manure and shelter; they are saleable in America, from January until July, when the market is supplied with the native growth. For directions in packing, see April.

We have now seen what may be done with a soil and climate so favourable for the production of such a variety of European and tropical fruits and vegetables.

Let us hope that the agricultural associations of England and Scotland may not remain indifferent to the advance of agriculture in Bermuda; also that the Home Government, which has so liberally aided in England the application of geological science to all branches of industry, may remember that the agriculturists of Bermuda are at a distance of 3,000 miles from the focus of inventions and reference.

Would such a movement in England have no reaction on Bermuda?

In my opinion, no one deserves a greater sympathy from England than the settler in these islands, and no colony will react more beneficially on the welfare of the mother country than Bermuda.

CHAPTER X.

INHABITANTS.

The white people—Delicate languor of the women—The Tuckers—Rose of the Isles—Tom Moore and Nea—Different classes of people of colour—Distinctions of the tribes by Don Antonio de Ulloa—Little knowledge of imitative arts—Development of the vocal organs—Display in vocal harmony—Improvisatori—Christmas holidays—Pyrrhic dance of the Gombays—Their dress—Prejudice against people of colour less in Bermuda than in the United States—Enjoyment of municipal rights, &c.—People of colour not often united with the white population in matrimony—Jealousy of public feeling—Cheerful disposition of people of colour proverbial—Their natural kindness to offspring and friends is equally well known as characteristic of the people of colour—The rising generation of the coloured race—Their readiness of perception greater than that of their progenitors—Social state of coloured population superior to that of the States of America—The want of intelligence a drawback—The census shows a steady increase of the inhabitants.

THE white inhabitants are hospitable and amiable; the women are generally handsome, agreeable, well-informed, and virtuous, possessing that delicate languor in their look and manner, which is always charming. Some of the descendants of the original

settlers are to be found at the present day, among whom are the Tuckers. Of this family there was one lady, who in the days of her youth, was esteemed the "Rose of the Isles;" but Tom Moore, who sang her praises, whatever may have been the sincerity of his vocal lyre, did not, like the noted Toby, "bear off the belle." The fair one has long since passed away, but she has left a very pretty representative in her granddaughter, who is looked upon as the belle of Bermuda.

The beautiful lines of the "Snow Spirit," addressed to "Nea," Miss Fanny Tucker, of Bermuda, were not of any avail; she heeded not the invitation of the amatory bard, "to fly to the region of snow," but seemed to have been content with the silvery bowers and perfumed isle, and preferred being united to a cousin, a gentleman of her family name.

People of Colour and Native Blacks.—The coloured inhabitants are persons of mixed blood (usually termed people of colour), and native blacks. Of the former, all the different classes, or varieties, are not easily discriminated. In the British West Indies they are commonly known by the names of sambos, mulattos, quadroons, and mestizos. Thus a sambo is the offspring of a black woman by a mulatto man, or *vice versa*; a mulatto is the offspring of a black

woman by a white man; a quadroon is the offspring of a mulatto woman by a white man; and a mestizo, or mustee, is the offspring of a white man and a quadroon woman. The Spaniards, from whom these appellations are borrowed, have many other and much nicer distinctions, of which the following account is given by Don Antonio de Ulloa, in his description of the inhabitants of Carthagena:—

“Among the tribes which are derived from an intermixture of the whites with the blacks, the first are the mulattos; next to these are the *tercerons*, produced from a white and a mulatto, with some approximation to the former, but not so near as to obliterate their origin. After these, follow the *quarterons*, proceeding from a white and a *terceron*. The last are the *quinterons*, who owe their origin to a white and a *quarteron*. This is the last gradation, there being no visible difference between them and the whites, either in colour or features; nay, they are often fairer than the Spaniards. The children of a white and *quinteron* consider themselves free from all taint of the African race. Every person is so jealous of the order of their tribe or caste, that if, through inadvertence, you call them by a degree lower than what they are, they are highly offended. Before they attain

the class of the quinterons, there are several intervening circumstances which throw them back; for between the mulatto and the black, there is an intermediate race, which they call *sambos*, owing their origin to a mixture between one of these with an Indian, or among themselves. Betwixt the tercerons and mulattos, the quarterons and the tercerons, &c., are those called *tente en il ayre* ('suspended in the air'), because they neither advance nor recede. Children whose parents are quarteron or quinteron, and a mulatto or terceron, *salto atras retrogades*; because, instead of advancing towards being whites, they have gone backwards toward the black race. The children between a black and a quinteron are called *sambos de negroe, de mulatto, de terceron, &c.*"

The advantage possessed by a few of these people, of being able to read and write, is a circumstance on which they pride themselves greatly among the rest of the people of colour, to whom they consider themselves much superior.

Of those arts in which perfection can be attained only in an improved state of society, it is natural to suppose that the people of colour have but little knowledge. They undoubtedly possess organs peculiarly adapted to the science of music. In vocal harmony they display both variety and compass.

Nature seems in this respect to have dealt more bountifully to them than to the rest of the human race.

As practical musicians, many of them, by assiduous labour and careful instruction, become sufficiently expert to bear an inferior part in a private concert. Their songs are commonly impromptu; and there are among them individuals who resemble the improvisatori, or extempore bards of Italy; though I cannot say much for their poetry.

At times, especially during the Christmas holidays, they are not without ballads of a kind adapted to the occasion; and they give full scope to a talent for ridicule and derision. Their chief musical instrument is the *gombay*, a rustic drum, formed of a small barrel, one end of which is covered with a sheepskin. From such an instrument nothing like a regular tune can be expected; nor is it attempted. Hence, on such occasions, they are denominated *gombays*. They exhibit a sort of pyrrhic, or warlike dance, during which they perform certain feats in running, leaping, jumping, with frantic gestures and contortions.

The dancer's dress is very fantastic; he is ornamented about the head with a miniature *château*, and his face is enveloped in a hideous mask.

The prejudice which exists in Bermuda against people of colour is much less than it is in the United States. This great barrier, therefore, which prevents the coloured race from rising in society, the emancipated people in Bermuda do not sensibly feel. In this colony they have for several years enjoyed the same municipal rights and immunities as the white population. In civil affairs, and in the transaction of business, there is no distinction. By the Act of Emancipation, the freed people are admitted to the same standing as the whites; and may now fill any office, from a seat in the Assembly down to that of a rural constable.

There is, indeed, a prejudice in Bermuda which excludes people of colour from social intercourse with the higher classes of society. Nor is pure white and mixed blood often united in matrimony. Public feeling does not allow this, or, at the least, regards it with jealousy. The people of colour have, unquestionably, a temperament peculiar to themselves.

Their cheerful and easy disposition and good-natured humour are proverbial. Their natural kindness, and their attachment to their offspring and friends, when not counteracted by adverse influences, are equally well known.

The rising free generation are quite a superior order of beings to their ancestors, and exhibit a readiness of perception and adaptation rarely shown by the preceding race. They enjoy a freer intercourse with the white people, and observe enough of their habits and manners to acquire the ideas and modes of thinking which are peculiar to civilized society.

It will therefore be obvious that the people of colour in Bermuda stand on entirely different ground from those in the free States of America. Instead of being a redundant portion of the community, they fill a place of the utmost importance. They will, in fact, constitute the bone and sinew of society; and nothing but the want of intelligence can prevent them from assuming the rank of the labouring classes among the white population of the islands. What their position in society may eventually be, it is impossible to predict; but should the fostering care of the colonial government be secured for them, and should the means of education and religious knowledge be adequately supplied, I see no obstacle in the way of their advancement.

The annexed tables give the census of 1843 and of 1851; but at the present time, the population is not less than 12,000, a little more than half of whom are of coloured or mixed race. Before the Emancipation

Act was passed, the greater number were slaves. They are a hardy race of people, and, with proper training, become excellent sailors:—

COMPARATIVE TABLE OF THE POPULATION OF BERMUDA
IN 1851 AND 1843.

Census, 1851.

Parishes.	White.		Coloured.		Total.
	Males.	Females.	Males.	Females.	
Pembroke.....	431	606	495	703	2,235
Devonshire	129	217	208	230	784
Smith	103	135	128	148	514
Hamilton	177	200	330	387	1,094
St. George	365	436	431	659	1,891
Paget.....	195	293	233	347	1,038
Warwick	180	270	241	283	983
Southampton ...	145	218	246	308	917
Sandy's.....	231	329	520	556	1,636
Total.....	...	...	...	...	11,092

Census, 1843.

Pembroke.....	422	572	444	641	2,079
Devonshire	120	208	173	224	729
Smith	81	122	113	126	442
Hamilton	152	209	303	327	991
St. George	260	375	394	578	1,607
Paget.....	176	276	189	231	867
Warwick	170	267	201	256	895
Southampton ...	125	232	231	300	888
Sandy's.....	213	354	414	451	1,432
Total.....	...	...	...	...	9,930

CHAPTER XI.

EDUCATION.

Varied classes of the population—Enterprising and industrious Americans—They contribute to maintain and support the energies of the Bermudans—Extraordinary resources of Bermuda cannot be viewed with indifference by the philosophic and contemplative mind—Diffusion of the humanizing arts—Character of Berkeley College—A magnificent charity—Great desideratum of a place of study and retirement for young men—Berkeley College should be thrown open to white and coloured people in the West Indies—Great advantage of the college to Bermuda—National feeling—School education of young people of colour—Prejudice of the white population—Bishop Berkeley—The colony a centre of commerce and its advantages—The spirit of literature and philanthropy—Free schools—Facts relating to the education of the poor.

From the review taken in the preceding chapters, it will be seen how varied is the population of this archipelago, both in character and employments; and that it consists both of agricultural and commercial classes of different ranks in the scale of each—from the poorest, who seek a precarious subsistence in the

fields and around the shores, to the civilized Bermudan, who has drawn forth the riches of the soil; and from the petty trader, who collects the scattered produce of the islands, to the native capitalist, who receives and disperses it to more distant regions.

Situated between the rich and populous continent of America on the one hand, and the West Indies on the other, the demand for the produce of the colony is unfailing; and that produce is only limited by the extent of the population.

When we consider that Bermuda is situated on the very threshold of America—a country overflowing with an enterprising and industrious people, anxious and eager to settle wherever security and protection are afforded; that it is the Americans who have chiefly contributed to maintain and support the energies of the population, and diffuse the stimulus of their own activity wherever they have settled;—if we consider this, the resources of these islands will at once appear unlimited.

Circumstances like these cannot be viewed with indifference by the philosophic and contemplative mind. The diversified form in which the human character is exhibited, the new and original features which it displays, the things which have restrained

or accelerated the development of men's nature in these regions, offer sources of almost inexhaustible inquiry and research.

Children of the ocean, as we may call the inhabitants of this archipelago, and maintaining with the adjacent continent a constant and rapidly increasing intercourse, the means ought to be afforded them of prosecuting literary and scientific studies with facility and advantage.

Such may be the range of inquiry open to the philosopher; but to him who is interested in the cause of humanity, who believes that the diffusion of the humanizing arts is as essential to the character of our nation as the acquisition of power and wealth, and that wherever our flag floats it should confer the benefits of civilization on those whom it protects,—to such a man it will seem no less important that, in proportion as we extend the field of our researches and knowledge, we should equally endeavour to promote the advantage of those with whom we are connected, and diffuse among them the means of moral and intellectual advancement.

To this end the revival of Berkeley College was attempted. The object was merely, with the least possible pretension, to commence an institution. This institution, although in its infancy, and at present

all but useless, may be made the foundation and instrument of a great and lasting change in the entire West Indies. That it was originally intended as a university for youths, and not a mere school for boys, is evident from the terms of the founder's will; and it is in this light alone, and with a view of commencing and ultimately perfecting its original design, that it deserves the most serious attention of the trustees of the insular legislature, and even of the Government at home. It is quite ridiculous that the object of such a magnificent charity, with such large actual funds, should be left wholly to the support of the people of colour.

A great desideratum in Bermuda is a place of study and retirement for young men. As it is, those who cannot afford the heavy expense of going to Oxford or Cambridge, are obliged to break off the yet unfinished work of their education, to set up at seventeen or eighteen for men, and undertake duties for which they are utterly unqualified. They come away from school half educated in heart and intellect, and are then for the most part placed in situations where every temptation to licentiousness besets their path, and many dangerous privileges are of necessity committed to their discretionary exercise.

A college on the plan of a university—that is to say, where a reasonable approach to universality of instruction is proposed—would supply this deficiency, remedy the consequent evils, and be a blessing and a source of blessing to the colonies. Its hall and lectures should be thrown open to every white resident, as well as to the people of colour, in the British West Indies. For their rooms and commons the students should of course pay, and the surplus funds of the charity should be laid out in the erection of fellowships, in salaries to professors, and prizes for youthful talent. Tutors of undoubted zeal and ability should be provided, and the principal should be a man of that nerve and judgment which will be requisite to govern and defend a great and novel institution.

The domestic economy of the college would be on a much simpler and less expensive plan than that of the universities in England; less than half what is now spent by the creoles in travelling or idleness, would decently maintain them.

In the widely-extended operations of the Society for the Propagation of the Gospel in Foreign Parts, this college might be made to exercise an influence prolific of incalculable good; and with all deference to the members of that venerable body, I exhort

them most earnestly to give this subject closer attention than heretofore, and examine with hope and faith its capabilities of benefiting mankind. It is to be wished by every philanthropist that no obstacles may arise in any quarter to a thorough reformation of the present institution, but that it may be made capable of communicating its advantages to the natives of the other islands. Bermuda itself would increase in importance and wealth from the constant influx of strangers, and the excitement of domestic industry.

As Englishmen, we obey the impulse of our nature in striving to raise all mankind to a level with ourselves. We believe that the Queen's commission should in all places impart equality of protection; that justice, in the east and west, should plant the staff; and that a charter should lie in the waving flag of England. To this national feeling the colonists must be respectful;—it is a feeling too virtuous to be hurt by insinuation and too powerful to be resisted by violence.

In regard to school education and religious instruction of young people of colour in Bermuda, though they have time and unrestricted liberty to attend to such subjects, and though perfect toleration is secured by law to religious teachers of all denomi-

nations—yet the means of imparting knowledge are very inadequately provided, and the encouragement given to improve these means is far less general and hearty than the urgency of the case demands. If anything is to elevate the character of the people of colour, it is the inculcation of moral and religious principles, and the imbuing of their minds with knowledge. In no other way can they be taught self-respect, and effectually guarded against the deteriorating tendencies of their situation. Yet this is a point, to the importance of which long prejudice blinds the understandings of the white people, and which the British Parliament seems not fully to have considered, or at least not to have adopted adequate means to attain.

Bishop Berkeley most wisely selected Bermuda as the most suitable place for a college, from whence as a centre its influence may be diffused, and its sphere gradually extended, until it at length embraces even the whole of that wide field whose nature has already been shown.

The rays of intellect now divided and lost, will be concentrated into a focus, from whence they will be again radiated with added lustre, brightened and strengthened by European light. Thus will our colony not only become the centre of commerce and

its luxuries, but of refinement and the liberal arts. If commerce brings wealth to our shores, it is the spirit of literature and philanthropy that teaches us how to employ it for the noblest purposes. It is this that has made Britain go forth among the nations, strong in her native might, to dispense blessings to all around her. If the time may come when her empire shall have passed away, these monuments of virtue will endure when her triumphs shall only be a name.

Let it still be the boast of Britain to write her name in characters of light; let her not be remembered as the tempest, whose course was desolation, but as the gale of spring, reviving the slumbering seeds of mind, and calling them to life from the winter of ignorance and oppression. Let the sun of Britain arise on these islands, not to wither and scorch them in its fierceness, but like that of her own genial skies, whose mild and benignant influence is hailed and blessed by all who feel its beams.

In the tables given at pp. 187, 188, will be found returns of free schools in operation in the colony from the 30th day of June, 1854, to the 30th day of June, 1855, and 31st March, 1857, to 30th June, 1858, for the education of the poor; by whom taught; under what superintendence; the average

daily attendance of pupils; the present salary and emoluments of the teachers, and from what source derived.

The colony owes much to the benevolence and kindness of Bishop Spencer, in promoting education among the poorer classes and coloured inhabitants. He established and maintained not only many others, but promoted the few schools which he found, by his influence.

Facts are stubborn and sturdy things to deal with, and it will be sufficiently seen and proved by the annexed tables. The extent of the grievous calamity the poor of Bermuda suffer in this respect may be gathered at a glance from the most cursory view of these two returns of free schools for the education of the poor in operation in Bermuda, between 30th June, 1854, and 30th June, 1855; also 31st March, 1857, and 30th June, 1858. The latter return, with the report of the committee, is particularly interesting. Let us now compare the average daily attendance with the census of the population in 1851; wherein it will be seen that these poor people have few chances of enlightening their minds. Additional light may be thrown on the subject by the following report by W. H. Mayor, Esq., Inspector of Public Schools, dated June 7, 1859:—

REPORT by WILLIAM HENRY MAYOR, Esq., *Inspector of Public Schools, on the Parochial and other Schools in Bermuda receiving aid from the Public Treasury, to his Excellency the Governor, the Honourable Members of her Majesty's Council, and the Members of the Honourable House of Assembly, in Legislation.*

Sandy's Parish, Bermuda,

GENTLEMEN,

June 7th, 1859.

On the 1st October last, I received from his Excellency the Governor, my appointment, and, a few days subsequently, my commission, as Inspector of Public Schools, under and by virtue of a certain Act of your legislature, intituled "An Act to aid in the Establishment, and to provide for the Inspection of Public Schools;" and by the 9th section of the said Act, it is enacted, that "Reports of all the schools receiving aid from the Public Treasury shall annually be made to the Legislature by the Board of Education and by the Inspector of Schools."

In conformity with the said enactment, I beg, respectfully, to submit the following report:—

On the 29th October, I received my instructions from the Board of Education, directing me "to visit, inspect, and report upon" twenty schools, "for which

application had been made for aid." In accordance with the said instructions, I commenced my first visit of inspection on the 2nd, and completed it on the 19th November. I found the school at Tucker's Town (one on the list) without a teacher, consequently nineteen schools only were given in to the Board as having been visited and inspected. A report was made, separately, upon each school, which, proving satisfactory to the Board, the whole were admitted on the list of schools to receive "aid."

I found the teachers, generally speaking, possessed of sufficient knowledge of the several branches of education which they professed to teach to enable them to conduct the description of schools in which they were engaged. But, in many instances, they were deficient in other qualifications, essential to constitute them efficient teachers.

It is admitted, that among all the great improvements which have taken place within the last thirty years in the several arts and sciences, one of the most valuable (at least to the rising generation) is that in the science of imparting knowledge and instruction to the young—as particularly adapted to those schools in Bermuda which it is my duty to inspect. Some quarter of a century ago, the old parish clerk and ancient dame of the village

were the keepers of the rural parochial schools in England; and they had an idea (never having been better instructed) that the birch rod, with an occasional rap with their horny knuckles upon the poor pates of their unfortunate pupils, was the best, if not the only method, of instilling "the rudiments." But this state of things happily exists no longer. In the place of these (doubtless well-intentioned) worthies, are to be found well-educated and enlightened teachers, of both sexes, who have been regularly trained for their work in colleges set apart for that purpose, in which, it may be said, they graduate—if acquiring a first, second, or third-class certificate, according to their attainments, may be so termed. When a vacancy occurs in a charity school in England, it is, without delay or difficulty, filled up with a properly trained and efficient teacher. Not so in Bermuda. If a vacancy occurs, say in one of the parochial schools, it is perhaps closed for weeks before the rector can hear of any person whatever likely to fill it. When he does, that person may not be one after his own heart; but, rather than the school should remain longer closed, makes the engagement, though, perhaps, at the same time, very dubious of the person's competency. The same difficulty is doubtless experienced by other

denominations in procuring suitable teachers for their schools.

The charity schools in Bermuda cannot possibly keep pace with similar schools in Great Britain, Ireland, and America, or with our military schools at St. George's, and our convict schools at Boaz Island, unless the teachers are trained to their work.

The art of teaching, or imparting knowledge, according to the method and discipline of the improved system, is in itself a science, and, like all other sciences, must be learnt and acquired.

To improve the present defective system, which, with few exceptions, exists in the schools receiving aid from the Treasury, and to provide efficient teachers to fill any vacancies which may occur in them and in other similar schools at any future time, I would, with the greatest deference, recommend that a trained master, with a first-class certificate, should be introduced into the colony.

Such an one would doubtless be induced to come out if an annual salary of 80*l.* or 90*l.* were guaranteed to him for a period of two years. This trained master might keep one of the central schools, which would become "the model." A few young men would, doubtless, gladly avail themselves of

an opportunity of qualifying themselves as teachers, paying a moderate premium for the privilege, and in a short time they would become competent to fill any vacancies. This trained master, thus keeping one of the central schools, might give his weekly holiday on Friday, instead of Saturday, which would enable him on Friday to visit the several schools in rotation, in order to give instruction to the teachers; and on Saturday the teachers might attend, occasionally, at his school for that purpose.

Should this suggestion be considered expedient and feasible, it would appear that the emoluments arising from the school (say 60*l.* or 70*l.*), together with the premiums to be paid by the training pupils, would nearly equal the amount of the salary guaranteed. So that a small amount only would be required from the public chest. In case that I shall be continued in the office of inspector, and that my visits be rendered less frequent, it will afford me much pleasure to relinquish a part of my small emoluments, if it might in any way assist in attaining so desirable an object. I beg to apologize for this lengthy digression—my deep sense of the great importance of the subject must plead my excuse..

In resuming my report, I would beg to state that during my visits I have received from the teachers,

without exception, every facility in the examination of the schools, and much courtesy—many of them expressing their conviction that the periodical visits of the inspector would have a beneficial tendency; not only in exciting an increased diligence in their pupils, but would also be the means of correcting any errors in their system of tuition of which they might be unconscious.

I found the registers, with few exceptions, properly kept. Two or three of them, however, did not distinguish whether the pupils attended both parts of the day or not; proving that the roll, in these cases, had not been called twice a day; although so important to be done, in order to preserve proper order and discipline. This error has since been rectified.

In many of the schools, errors existed in the method of tuition: the principal one, most prevalent, appeared to be an over-anxiety on the part of the teachers to get their pupils through a certain book, without due regard to frequent repetitions and catechetical exercises, to cause them to retain and understand what they had previously committed to memory. The consequence was, that a class which had gone through the greatest part of the geography or grammar, when examined by questions on the first

two or three pages of their book, the answers were very imperfectly given, if at all.

The pupils are frequently placed in books too difficult for them. A class may be in Carpenter's spelling, as far as words of five or six syllables, with their meanings; but when tested by writing from dictation or memory, they were found deficient in spelling correctly very simple monosyllables. In reading also, pupils had been frequently placed in the Bible class, when just out of the primer; the result was that they stammered and guessed at every word; thereby, through their blunders, converting the Holy Scriptures into nonsense, if not into something worse. The excuse in many schools was, that they had no intermediate books between the primer and the Bible, such as the second and third books as issued by the Society for Promoting Christian Knowledge; many of the children being orphans, and the parents of others being too poor to purchase them.

I do not consider that religious instruction is sufficiently attended to in the schools generally. I fear that the pupils are more anxious to acquire the knowledge of writing, grammar, geography, and arithmetic, rather than to be able to recite correctly and to understand thoroughly, scripture history and

the catechism: and the teachers, perhaps, in some instances, may consider that they gain more credit with the parents of their pupils by advancing them in those branches, even if it be attained by the partial neglect of their Christian knowledge. I do not scruple to endeavour to impress upon the minds of the teachers, that the Legislature contemplates, and the Board of Education expects and requires, that religious instruction shall constitute a prominent part of the education given in the schools receiving aid from the Public Treasury, and to the catechists of the Society for Promoting Christian Knowledge (comprising sixteen out of the nineteen teachers), I state, that the very name of the society which patronizes them should be a constant memento, that "Christian knowledge" is especially expected and required to be inculcated in their schools.

In some of the schools the pupils read and recite very indistinctly; more particularly in reciting the catechism; so much so, that it is difficult, if not impossible, to ascertain whether they say it correctly or otherwise. To test the state of the case in many of the schools, I set such of the pupils who were competent, to write from memory the Lord's Prayer, the Creed, a Commandment, or some other part of the catechism. The result sadly proved my fears

to be too well founded,—that they understood not what they said. Words of somewhat similar sound, but of quite different meaning, were in some cases substituted; in others, words appeared to be coined without any meaning in them at all. These errors, in many instances, were committed by pupils learning grammar and geography. I am happy to report, however, that some improvement has since taken place in this respect.

The infant portion of the pupils (comprising more than one half) are the greater sufferers for the want of the improved system being introduced into the schools. The teachers, with few exceptions, consider that until their pupils can read, no other instruction can be given them. Consequently, in a great majority of the schools, no oral instruction is introduced, so well calculated as it is to call forth and expand their reasoning faculties, to strengthen their memories, and last, not least, to relieve the tedium and monotony of their A B C's and monosyllables.

On my second visit, I found in one school nineteen children who could not read, said the Lord's Prayer very imperfectly, and knew nothing of the Creed. I inquired of the teacher "why they were not taught the Creed?" I was answered, "because they cannot read." I took the nineteen children, and made them

all repeat the Creed together for half an hour; at the expiration of that time, many of them could answer simple questions upon it. On a subsequent visit, I found that they had made considerable progress; but evidently sufficient pains had not been taken. In another school, I found twelve or fourteen infants in their A B C who were entirely ignorant of the Creed. I took them up as in the former case, with similar success: at my next visit these infants could not only separately say the Creed perfectly, and answer questions on the same, but could also recite some other parts of the Church Catechism. The teacher appeared much pleased with his success, and stated that the children were very much interested in this exercise, and that, at my next visit, he hoped they would be able to say the Commandments also. In one school, Mrs. Trimmer's *Teacher's Assistant* is used with much success. It is a book containing a series of instruction on various subjects, chiefly religious, by question and answer, adapted entirely to the capacity of infants. "Lessons" from this work are on the catalogue of the Society for Promoting Christian Knowledge, and are to be obtained at the depository. I have strongly recommended the book to several of the teachers.

In the schools generally are taught reading,

writing, arithmetic, grammar, and geography, and in three or four geometry. The latter science was introduced into many of the schools by the late lamented Sir William Reid, who paid a sergeant of Royal Engineers to give instruction to the teachers every Saturday afternoon, at Hamilton—he paying the passages per mail of those residing at a distance. Some persons (perhaps without due consideration) have ridiculed the idea of geometry being taught in these schools, but it must be admitted that this science is particularly useful to the mechanic or artisan, whether he be a mason, a house or ship carpenter, a wheelwright, or even a gardener; not that he need dive into the abstruse problems of Euclid, but merely that he should understand the first principles.

The history of our mother country, to my surprise, is not taught in any of the schools.

Psalmody is practised in every school, and taught in several. This delightful recreation is much encouraged in the parochial and other charity schools in England. Indeed, in the training colleges for masters or mistresses, instruction is given in vocal music; and in some of the colleges for masters, instrumental music is taught also, to qualify the pupils for organists and choir-masters for the several

parishes in which they may be engaged. Sacred music is found to have a very beneficial effect upon the pupils, in calming their passions and softening and elevating their minds and feelings. It is natural that they who have been taught, or they who have practised sacred music, should take a deeper interest in public worship, enabling them to join in the chants and other services of the church, or of any other place of worship they may attend: and these habits and feelings, thus engendered, will probably continue with them through life.

The teachers, in too many instances, do not appear to hold that position with regard to the parents of their pupils which they ought to do. The teacher receiving aid from the Treasury, and a further small gratuity from some charitable society, is considered by many to keep a "free school;" consequently, those parents who can well afford to pay something towards their children's schooling, do so very irregularly and reluctantly—more as a matter of favour than of right and duty; and after placing their children at school, they think that they can be sent to school or kept at home at pleasure. Children are frequently kept from school for weeks together, without any reasonable cause (as sickness, &c.), and sent again without the slightest excuse being offered for

their absence. The teacher receives them, and is content to lose his small emolument which ought to be paid for the time they were absent; but he has also the additional trouble of teaching over again what their absence has caused them to forget. This conduct is allowed to be repeated with impunity, the teacher fearing to be too particular, lest the pupils should be withdrawn altogether.

Great irregularity exists in some of the schools in consequence of the pupils not attending punctually at the appointed hour. The teacher, instead of remonstrating with the parents, postpones calling the roll and opening the school for perhaps half an hour or more, awaiting the arrival of the pupils. This course only encourages and increases the evil, and is subversive of all good government and discipline.

I regret that the teachers do not evince more firmness and independence as regards their conduct, both towards pupils and parents. If they are in want of a motto, I would recommend this rather hackneyed one—*Suaviter in modo, fortiter in re*—some possess the one, some the other; but unless both are combined, a teacher, with all his other qualifications, will not be sufficient.

A code of rules for the regulation of teachers,

pupils, and parents would have a very salutary effect. By them, the parents should be obliged to make their weekly payments regularly, inclusive of the time their children are kept from school without reasonable cause. They should also be obliged to provide such books and other requisites as the teacher may direct; for they now furnish such as they please, or as may be most convenient for them to procure, causing such a diversity, that the teacher is prevented properly classifying his pupils, thereby greatly retarding their progress, and giving considerable additional trouble to the teacher. So badly do the parents supply their children even with slate-pencil, that frequently a class is called up for exercise, and it is with much delay and difficulty that a sufficiency can be found in the whole school for that particular class.

In the schools, with few exceptions, books and other school requisites are much needed and required. In every school there are orphans and other children whose parents are too poor to provide them. The XIVth Section of the Act relating to Public Schools provides that orphan children may be sent by the vestries to the several schools receiving aid from the Treasury, and that the teacher to whom the order is sent shall receive and educate the same.

It will appear by the tabular statement annexed, that only two children have been received by the teachers under the Act, and those two in Sandy's parish. It seems that an order for six children was made to Mrs. H. Nichols by the vestry of that parish, but four of them had been previously admitted into her school.

I cannot attribute the circumstances of one vestry only having taken advantage of this enactment, to any supineness, or neglect, on the part of the gentlemen constituting the several vestries; but I should rather consider that it reflects credit on the several teachers; inasmuch that I have every reason to suppose and believe that they have sought out and taken the very description of children which the Act provides should be sent to them. It may be inferred, therefore, that the orphan children, contemplated by the Act, to be sent to these schools, are now there, and receiving education; but your Legislature has made no provision for books and other requisites for them. There are also in these schools other children, whose parents are too poor to provide those necessaries of books, &c. I therefore, with great deference, venture to hope and trust that your Legislature may be pleased to grant a small sum for the purpose of providing the necessary books

and other school requisites for the use of these poor orphans, and such other children, whose parents, from sickness or destitution, are unable to provide them; so that the benevolent intentions of your Legislature may not be frustrated. In justice to the teachers, I must state that I believe that they do all in their power to remedy this evil; but it is unreasonable to expect that they should furnish all the requisites for these pupils at their own expense.

An impression exists in the minds of many, that the pupils remain after their education is completed, and until after they have arrived at the age of puberty; merely for the purpose of placing in the pockets of the teachers the annual sum of five or six shillings capitation money. This appears too absurd to require refutation.

The Board of Education, understanding that such an idea was prevalent, directed me to take a census of the classified ages of the pupils;—this I am now doing in my fourth inspection; and when completed, the result will prove that this impression is quite erroneous. There are a few instances of pupils being above the age of fifteen years; but they are those whose education was entirely neglected in

early youth. The complaint, by teachers generally, is, that the pupils are removed too prematurely, before it is possible for them to have received the necessary instruction.

I postponed commencing my visit of inspection at the proper time (15th May), understanding that the attendance of the pupils at school was interrupted by their assisting in the crops; and at the commencement of last week (when I intended to visit St. George's) the weather looked so suspicious that I did not venture, knowing that if it were rainy, the pupils would not attend, and my journey would be for nought. Yesterday I intended to visit St. George's per *Siren*, but to my disappointment found that she was not going. It was not my intention to begin this report, until I had finished the inspection, in order to be enabled to complete the tabular statement annexed (page 182); but, as it will take a week, at least, to accomplish it, and understanding inquiries were being made for the report, I have thought it best to submit it without delay, leaving the tabular return to be completed afterwards.

I will conclude by stating that improvements have taken place in the schools generally, but not to the extent I had hoped and expected very sanguinely,

would have been the case. I found several of the schools in a very creditable state, both as regards system and discipline; the teachers having spared neither time nor expense in availing themselves of every advantage the islands afforded to qualify for their important office; and their schools evince that their time and money were not expended in vain.

I am somewhat dubious whether your Legislature may not expect and require a separate report on each of the schools; if so, it will give me much pleasure to furnish it, as also any other information you may be pleased to call for.

I have the honour to be, &c.

W. H. MAYOR,

Inspector of Schools.

Parishes.	Name of Teacher.	Number on Register.			Classified Ages.			Adequately Paid.	Sent by Vestries.	Average Attendance.			Present at Inspection.				
				Total.			Under 10.			10, under 15.	Above 15.	Males.	Females.	Total.	Males.	Females.	Total.
		Males.	Females.														
Sandy's	Mr. James Wade	23	16	39	35	3	2	..	..	50	13	14	8	23	
" Southampton	Mrs. H. B. Nichols	22	21	43	43	8	2	..	..	20	17	29	17	40	
Warwick	Mrs. E. Newbold	11	4	15	15	8	2	..	..	10	5	9	4	13	
"	Mr. Charles Symonds	18	7	25	24	1	..	..	..	10	5	15	5	13
Paget	Mr. David Tucker	26	30	56	57	..	..	..	..	25	23	48	24	45
"	Miss S. T. Newbold	6	6	14	13	2	..	..	..	7	5	12	5	13
"	Mrs. S. Redman	9	6	15	15	2	..	..	..	4	9	13	8	18
Pembroke	Mr. W. G. Simmons	17	32	49	37	12	..	..	..	12	18	25	16	36
"	Mr. J. H. Thomas	55	35	90	66	13	60	..	..	40	50	60	41	61	
"	Miss E. D. Hinson,							..	..						
Devonshire	Mr. Peter F. Tucker,							..	..						
"	Mr. S. A. Smith,							..	..						
Smith's	Miss E. S. Williams,							..	..						
"	Miss E. Outerbridge,							..	..						
Hamilton	Mrs. Wells,							..	..						
"	Mr. J. G. Allen,							..	..						
"	Miss Wilkinson,							..	..						
St. George's	Mr. B. Burchall,							..	..						
"	Mrs. E. Trotter,							..	..						

REPORT on the PUBLIC SCHOOLS in operation between 31st March, 1857, and 30th June, 1858.—Presented to the Legislature, 13th September, 1858.

The Committee of the Council and Assembly appointed to inquire and to report to both Houses as to the number of schools in operation in the colony, between the 31st March, 1857, and the 30th June, 1858, for the education of the poor, by whom they were taught, and under what superintendence, and other particulars respecting the same, has the honour of now submitting the result of its inquiries.

The particulars of the schools in the parishes of Saint George, Devonshire, Pembroke, Paget, Warwick, Southampton, Sandys, Hamilton, and Smith, will be found in the tabular return given at page 187. The particulars respecting the schools in the two last-named parishes, namely, that formerly kept by Benjamin Burchall, and afterwards reopened under Nathaniel Gardiner, and that kept by Eleanor Outerbridge, were received from the Ecclesiastical Commissary, the Rev. Dr. Tucker, who, in the absence of the rector, and during the vacancy in the living, issued, as the committee learns, the certificates required by the District Committee of the Society for Promoting Christian Knowledge. These schools

have been superintended by the rector of the parish, but the committee would remark that during a considerable time the rector was absent from the colony, and during the remainder the living was vacant. The committee, therefore, concludes that what is meant is that since the living was filled, that is to say, within the last month, the schools referred to have been visited by the new rector. The committee is informed that during the vacancy the school of Miss Eleanor Outerbridge was visited by the officiating minister.

But there are, or have been, other schools in operation in the two parishes in question, of which no particulars have reached the committee through any official channel. Two of these have been accustomed to receive aid from the Public Treasury in former years, namely, Mrs. North's and Mrs. Wells's. Mrs. North closed her school on the 26th August, 1857, and her connection with the Society for Promoting Christian Knowledge on the 30th June, 1857. Mrs. Wells kept school in connection with the Society during the whole period embraced by the report, it seems. The particulars of Mrs. Wells's school have been furnished by her to a member of the committee as follow, namely :—Number of pupils, 38, including 13 males and 25 females ; daily attendance, 28 ; subjects taught, the usual branches, with grammar,

catechism, and sewing; salary from Society for Promoting Christian Knowledge for year ending 31st March, 1858, 4*l*., and receipts from pupils, 3*l*. 0*s*. 5*d*.; school superintended by the officiating minister, the Rev. Francis J. B. Lightbourn.

In Hamilton parish there is a large school kept by John G. Allen, who has himself furnished the committee with the following particulars. The school is supported by the Hamilton Parish Temperance Society, which guaranteed the teacher 30*l*. a year, hoping to obtain a similar sum from the public. There are on the books 74 males and 55 females, total 129, and in daily attendance, on an average, 83. Besides the usual branches are taught grammar, geography, stenography, vocal music, and catechism. The school was established 24th August, 1857, and, according to Mr. Allen's report, has been superintended by the rector; but, for reasons before adverted to, this can only mean that since the period embraced in the return the new rector has visited the school, which the committee learns to have been the case. Indeed, the committee has received from the Rev. Frederic J. M. Evans, the rector, a certificate of his having inspected this school, and being satisfied with the manner in which it was conducted. Mr. Evans found 99 children in attendance. A

member of the committee was present on the occasion referred to.

In conclusion, the committee must express its regret that it has no means of reporting to the legislature the state of efficiency, actual or comparative, of any of the schools seeking aid from the Public Treasury, with the single exception just mentioned, which afforded one member of the committee an opportunity of judging favourably of one of the schools. This question, the most important connected with these institutions, the present system of granting aid provides no machinery for solving.

THOS. A. DARRELL,

T. W. MERCER,

S. BROWNLOW GRAY,

J. H. HARVEY,

10th September, 1858.

Committee.

RETURN of PUBLIC SCHOOLS, having be

Parishes.	Teachers.	Superin- tended by	No. of Pupils.			Daily Average for ending 1857.
			Male.	Female.	Total.	
St. George's.	Eliza Trott . . .	Rector of	9	9	18	. d.
Ditto .	Benjamin Burchall .	Parish. Ditto	46	40	86	5-
Ditto *	George Nathaniel Only	Ditto	24	16	40	3 0
Ditto †	William Henry Mallory	Ditto	23	14	37	2-
Devonshire	Eleanor J. Williams .	Ditto	13	11	24	1 0½
Ditto .	Rebecca A. Newbold .	Ditto	14	13	27	2 0
Pembroke	Ellen Hinson . .	Ditto	3	8	11	1-
Ditto .	Peter F. Tucker . .	Ditto	26	14	40	3 0
Paget .	Sarah Redmon . .	Ditto	10	6	16	1 0
Ditto ¶	Israel T. Richardson .	Ditto	15	19	24	2 0
Warwick	Anne Moore . . .	Ditto	9	3	12	1 0
Ditto .	David Tucker . .	Ditto	34	27	61	4 0
Southampton	Elizabeth Newbold .	Ditto	11	5	16	1 0
Ditto .	W. O. F. Bascome .	Ditto	16	18	34	2 0
Sandy's	Honora B. Nichols .	Ditto	31	16	47	4 0
Ditto .	James Wade . .	Ditto	23	25	48	3 0

REPORT of PUBLIC SCHOOLS in HAMILTON and .

Hamilton	Teachers.	Superin- tended by	No. of Pupils.			Daily Average for ending 1857.
			Male.	Female.	Total.	
Hamilton .	Benjamin Burchall ** .	Ditto	39	14	53	3
Ditto .	Nathaniel Gardiner †† .	..	33	15	48	3
Smith's .	Eleanor Outerbridge .	Ditto	4	12	16	0

* Tucker's Town.

† St. David's Island.

‡ Opens

¶ Closed April 30, 1858.

** From July 1, 1857

A RETURN of FREE SCHOOLS for the EDUCATION

Parish.	Teacher's Name.	Superin- tended by.	When Esa- blished.	Number ing t	
				Males.	red.
Sandys . .	Honora B. Nichols . .	Rector of Parish.	1839	27	
Ditto . .	James Wade . . .	Ditto	1836	36	
Southampton	Elizabeth Newbold . .	Ditto	1841	13	
Ditto . .	Wm. Bascome* . . .	Ditto	1851	22	
Warwick . .	Ann Moore	Ditto	1838	8	
Ditto . .	David Tucker,† George Kimball,‡ A. Corbu- sier.§	Ditto	1838	12	
Paget . .	Sarah B. Redmon . .	Ditto	1852	8	
Ditto . .	Israel T. Richardson . .	Ditto	1838	31	
Pembroke . .	Peter F. Tucker . . .	Ditto	1836	38	
Devonshire . .	Rebecca A. Newbold . .	Ditto	1848	17	
Smith's . .	Amelia E. Wells . . .	Ditto	1847	12	
Ditto . .	Eleanor M. Outerbridge	Ditto	1852	3	
Hamilton . .	Martha M. North . . .	Ditto	1850	17	
St. George's .	John G. Allen	Ditto	1839	33	
Ditto . .	Eliza Trott	Ditto	1838	8	

* From 14th August, 1854.

§ 15th February, 1855, to

CHAPTER XII.

MANNERS AND CUSTOMS.

Evening assemblages—Balls—Dinner-parties—Shooting—Fishing—Boating—Regatta—Spectators—Bermuda damsels—Royal Bermuda Yacht Club—Superiority of sailing-boats—Sea-bathing—Fishing on the open sea—Intellectual resources.

THE amusements of the higher classes in Bermuda are much the same as in other colonies; and as all are engaged either in public or private business, or professional pursuits, their hours of relaxation are spent either in dinner-parties, or in evening assemblages at each other's houses, where quadrilles and dancing keep the younger members of society in pleasant occupation, whilst their elders look on, play at cards, or converse upon the topics of the day.

The Government House has usually given the *ton* in dinners and balls, with now and then a state dinner to the superior officials. The Admiralty House, too, is usually gay during the visit of the

Admiral and his squadron. All these parties are carried on during the winter.

Some fine shooting of migratory birds may be mentioned as a source of amusement during the winter months; but it is confined chiefly to snipe, plover, and wild duck.

In summer, fishing and boating in the harbour form other recreations. The young men usually get up a regatta on Hamilton Water for sailing and oared boats, and some very spirited matches take place; when the adjacent hills and vales are covered by spectators of both sexes, representing the Caucasian as well as the Ethiopian race, and there are damsels of divers hues,—the sable Venus, the bright mulatto, the delicate mustee, and the fair Bermudan sylph.

The “Royal Bermuda Yacht Club,” too, a little later in the season, usually come out very strong, and afford a great degree of amusement to lovers of aquatic sports. They usually wind up the entertainment with a ball to the inhabitants, where the Bermudan fair are seen to great advantage in the dizzy waltz, the graceful polka, or the stately quadrille.

The far-famed sailing-boats of the Bermudans are rigged with one, and some of them with two

shoulder-of-mutton sails, are extremely stiff, buoyant, work well, and sail remarkably fast, but require to be well ballasted. These little vessels are very numerous, and are, like the larger vessels, built of the native cedar, an expensive but durable wood. They do not rise in a lively manner in a heavy sea, in consequence of their having generally iron ballast, but throw the spray over the deck, the lee gunwale, when it blows hard, being under water, which is protected by a deck of about eighteen inches wide, that extends from the forecastle to the stern. These little boats are unsurpassed in their good qualities, and are more easily managed than any similar class of vessels we have ever met with in Europe.

Sea-bathing is very delightful along the shores to those who are accustomed to that source of health and enjoyment. A walk along the margin of the ocean, from Middleton's Beach to Port Royal, is one of the best relaxations to a stranger who is fond of walking, and musing, as he goes, on man and nature; for there the sea in all its grandeur on a stormy day wages war with the land. There, too, late in spring, you may see the huge whale gambolling; and there man, busy man, is fishing for the finny treasure of the sea in a boat, reduced by

distance to almost a speck, for the means of supporting his existence, whilst the angry waves rolling over the coral reefs and bellowing on the precipices under your feet, give ample evidence that his occupation is precarious.

Horse-racing, and amateur theatricals also, are occasional pastimes.

Amongst the resources of mental indulgence, we have a good public library in the town of Hamilton, established in 1839, by the Colonial Government, at the recommendation of Governor Reid. Access to the books is easy, and the subscriptions are very small, thereby placing at the disposal of every member of the community a fund of information.

A museum has also been established in the colony, but I am sorry to say very little interest is taken in enriching its shelves with curiosities of nature.

CHAPTER XIII.

NATURAL HISTORY.

Native birds—Mangrove-trees—Occasional visitants—Entomology—Genus *Diurna* (or butterflies)—Genus *Sphinx* (or the hawk-moth)—Genus *Phalena* (or moths)—*Coleoptera*—*Cidaria*—*Chanteuses* (or singers)—*Aphidii* (or plant-lice)—Genus *Coccus* (or scale insects)—*Coccus cacti* (or cochineal insect)—Insect changes—Apterus insects—Jigger (*Pulex penetrans*)—Death-watch—(*Anobium pertinax*)—Genus *Forficula* (or ear-wigs)—Genus *Blatta* (or cockroaches)—*Arachnides* (or spiders)—Genus *Scorpio* (scorpions)—Silk-spider (*Tetragnatha extensa*).

Birds.—To the naturalist, the groves, fields, bays, and shores of Bermuda are full of interest.

The groves and fields of these sunny islands ring with the melody of some of our native birds. The clear whistle of the white-eyed greenlet, or chick of the village (*Virco musicus*), like the shrill flute, resound from the fruit-trees, among whose deep green foliage his gay hues—rich green, white, and black—glance fitfully, as he shoots to and fro; and his companion the cardinal grosbeak, or red bird (*Pitylus cardinalis*), accompanies his shrill notes with

strains full of soft warbling music. It is the music of the red bird that makes our sunny glades and shady groves eminently melodious by day, sustaining almost the whole burden himself. On account of the beauty of its plumage and notes, it is often reared in cages.

Among the other native birds we may enumerate the following: viz. the common blue bird (*Sylvia sialis*) resembles very much in its manners and habits the *Saxicola rubicola*, or robin redbreast of Europe. It is very useful in destroying multitudes of noxious insects. We have a species of merle, the black merle, or blackbird, commonly called cat-bird, also improperly called mocking-bird (*Turdus merula*), a mistrustful species. Its plumage is entirely black. It inhabits gardens and sylvan districts, and is very frugivorous, and is remarkable, particularly, for the singularity of its note, which consists of a few harmonious sounds. It is a loud but monotonous songster, heard throughout the year. The ground dove (*Columba passerina*) is the smallest and only American species peculiar to Bermuda. It has a pretty cooing note, resembling that of the ring-dove. Lastly, the tropic-bird, or longtail (*Phæton athenis*), belongs to a species which fly very far from land, on the high seas; and as they rarely quit.

the boundaries of the torrid zone, their appearance serves to indicate to mariners the vicinity of the tropic, whence their common name of tropic-birds. On land, where they seldom resort, except to feed, they perch upon trees. They are closely related by affinity to the gannets. The occasional visitants are very numerous, many of them accidental and of great interest.

Eminently characteristic of a tropical shore is the dense belt of mangrove-bushes which lines a bay at Somerset, termed Long Bay. To a European, it is a strange sight to see a grove of trees growing actually out of the sea; and his admiration is not diminished when he examines more closely the structure of these singular plants. The trunk of every tree springs from the union of a number of slender arches, each forming the quadrant of a circle, whose extremities penetrate into the mud. These are the roots of the tree, which always shoot out in this arched form, often taking a regular curve of six feet in length before they dip into the mud. The larger ones send out side-shoots, which take the same curved form at right angles; and thus, by the crossing of the roots of neighbouring trees, and of the subordinate roots of each, a complex array of arches is produced, on which one may

securely walk for several yards, about eighteen inches above the mud, or above the surface of the water when the tide is in. The average thickness of these natural bows is about an inch, and if stretched straight, they would hardly support the weight of a man; but their vaulted form greatly increases their strength, and though they frequently swerve a little under the foot, I never knew one to break.

There seems to be a continual encroachment of the land upon the sea in certain parts of Hamilton Harbour by the agency of this tree. The mangrove, growing irregularly, projects its sombre shrubberies into the sea in capes and points, inclosing little bays, which, by the gradual growth of the encircling points, by and by become lagoons, or shallow salt lakes. On the sheltered expanse of these beautiful but treacherous lakes, the seeds of the surrounding groves begin to root, and presently we see rising here and there rounded clumps of mangroves, like little wooded islets spotting its broad bosom. These continually increase in extent, approach each other, and, in the course of years, unite into a continuous grove.

Occasional Visitors.—The unbroken silence and sheltered retirement of these lagoons offer tempta-

tions to aquatic fowl, of which they are not slow to avail themselves. The shallowness of the water, which often does not exceed eight or ten inches in depth, the abundance of marine animals that inhabit the mud, and the facilities for roosting presented by the arching roots and spreading branches everywhere around, enable these birds to pass their short sojourn here in security. Among the autumnal and winter visitants may be seen the Virginian rail (*Rallus Virginianus*), slowly running over the vaulted roots, or hurrying through the shallow water from the shelter of one clump to another, or wading about, picking up the small crabs on which it habitually feeds. Many of the little gambets and sandpipers (*Tringa* and *Totani*) also run about here; and, occasionally, that very curious bird, the hooded merganser (*Mergus cucullatus*), and many of the *Ardeæ*, from the American bittern and the elegant egrets, to the great blue heron (*Ardea Herodias*), and the great American white egret (*Ardea egretta*), with its sweeping plumes of snowy whiteness, are commonly to be found here. One of these, the black-crowned night heron, or Qua bird (*Ardea nycticorax*), is peculiarly characteristic of these sombre solitudes; for though its jealous wariness precludes it from being often seen, its hoarse voice,

long, sudden, and startling, not unfrequently surprises the traveller as he passes near their obscure depths.

Entomology.—Among the riches of the Bermudan entomology, I have noticed, among the species of butterflies, the *Pieris brassicæ*, the great garden white butterfly, &c. The *Argynnis Paphia*, the *Heliconia*, and the *Nymphalis*, are common enough at all times, and in almost all situations. Others are abundant at a particular season or locality; but, in general, butterflies are to be obtained only occasionally. The insects belonging to the genus *Diurna* (or butterflies), and among the first family of the Lepidopterous order, are possessed of four wings, which are generally covered with microscopic scales, frequently exhibiting the most beautiful colours. The larvæ are provided with feet and a distinct head; the mouth of the perfect insect is a long spiral proboscis. The butterflies, so conspicuous for their beauty, are well-known representatives of this order, and the usual forms of these insects in the larva, pupa, and imago state are familiar to all.

To the second family of the Lepidoptera belong the *Crepuscularia*. They mostly fly either in the morning or evening (twilight). This family composes the genus *Sphinx*. They make a humming noise during flight. The *Sphinx* (or the hawk-moths)

are a genus distinguished by the antennæ or horns tapering at each end, which are generally short in proportion to the animal; and are also remarkable from the thickness of their bodies, which mostly terminate in a point.

The species are numerous and of very large size; one of the largest and most common is the death's-head moth (*Sphinx atropus*, belonging to the sub-genus *Acherontia*), remarkable for the skull-like patch on the back of the thorax, and for the squeaking kind of noise it emits. The caterpillar is of a very large size, and feeds on potatoes, jasmine, &c.

The third (and last) family of the Lepidoptera, the *Nocturina*, presents to us ordinarily the wings bridled in repose by a bristle or bunch of hairs arising at the base of the outer edge of the lower pair, and passing through a ring on the under side of the upper. The wings are horizontal or deflexed, and sometimes rolled round the body. The antennæ gradually diminish to the tips, or are setaceous. This family is composed, in the Linnæan system, of the single genus *Phalona*, or moths.

These insects in general fly only during the night or after sunset; many are destitute of a proboscis; some females are destitute of wings, or have only very small ones.

The classification of this family is exceedingly embarrassing, and our systems are yet but imperfect sketches. The great swift or ghost moth (*Hepialus humuli*) is a very common insect; the male, with silvery white wings, and the female, buff with reddish marks.

In the summer season, and more particularly on rainy nights, that section of nocturnal Lepidoptera, *Noctualites*, the *Pyrallis*, the *Phalonites*, also that of the *Tineites*, &c., fly in at the open windows in great numbers, and speckle the ceiling or flutter around the glass shades with which the candles are protected from the draughts. A great number of small beetles and other insects also fly in on such occasions; and several interesting species may then be met with. But in general beetles and the other orders are extremely scarce, and especially *Diptera*. During the month of August the shrubs and trees that border the roads are alive with insects of all orders, but particularly *Coleoptera*. Many species of *Longicornes*, *Cassidariæ* (or tortoise beetles), *Chrysomelius*, *Coccinella* (or lady-birds), &c. occur by hundreds on the twigs and leaves; and the air is alive with butterflies, *Hymenoptera*, and *Diptera*.

Throughout the summer months, in the hottest part of the day, the "chanteuses," or singers, produce a monotonous and noisy kind of music. These

“chanteuses,” which are a species of *Cidariæ*, comprise the *Cicadæ masiniferæ*.

The cicadæ are found upon trees or shrubs, of which they suck the sap. The female pierces the small twigs of dead branches of trees as far as the pith with her ovipositor—which is lodged in a semitubular sheath, formed of two valves, and composed of three scaly pieces of a narrow and elongated form, two of which are terminated like a file—in order to deposit her eggs therein; the number of which being great, the female makes a succession of slits, the place of which is indicated by so many elevations on the exterior. The young larvæ quit their birthplace, however, in order to descend into the ground, where they increase in size and become pupæ. Their fore-legs are short, the fore-thighs being very strong and armed with teeth, fitted for burrowing in the earth. The Greeks devoured the pupæ—which they called *tettigometræ*—as well as the perfect insect. Before coupling the males were preferred, but afterwards the females were selected, being filled with eggs. The male insect is the musician. The organs of sound are placed at each side of the base of the abdomen, internal, and covered by a cartilaginous plate, like a shutter, which is an appendage of the under side of the metathorax. The cavity which encloses these

instruments is divided into two partitions by a scaly and triangular edge, seen from the under side of the body; each cell exhibits anteriorly a white and folded membrane, and in the hollow part a stretched-out, slender membrane, which Réaumur calls the mirrors. If this part of the body be opened from above on each side, there is seen another folded membrane, which is moved by a very powerful muscle, composed of a great number of straight and parallel fibres, extending from the scaly ridge; this membrane is the *timbale*. The muscles, by contracting and relaxing with quickness, act upon the timbales, stretching them out or bringing them into their natural state, whereby the sounds are produced, which, even after the death of the animal, may be repeated by moving the parts over each other in the manner they act whilst alive. The *Cicada Ormi*, by puncturing the elm, causes it to discharge the saccharine fluid which has been termed manna.

All the homopterous hemiptera section feed only upon the fluids of vegetables; the females have a scaly ovipositor generally composed of three denticulated plates, and lodged in a scabbard of two valves. They use this instrument as a saw, to make notches in vegetables, in order to deposit their eggs. Cuvier divides this section into three families—*Cicadariae*,

Aphidii, and *Gallinsecta*—the former of which (*Cicadariae*) we have already discussed.

The *Aphidii*, commonly called plant-lice, are distinguished from the preceding by having only two points in the tarsi, and the antennæ filiform, or like a thread, and longer than the head, composed of from six to eleven joints.

The winged individuals have always two wing-covers and two wings. These are very small insects, having the body generally soft and the wing-covers very similar to wings, differing only in being larger and somewhat thicker. They multiply with exceeding rapidity.

The third family of the homopterous hemiptera, the *Gallinsecta*, have only a single joint in the tarsi, with a single hook at the tip. The male is destitute of a proboscis, has only two wings, which shut horizontally upon the body; the abdomen is terminated by two threads. The female is without wings and furnished with a proboscis. The antennæ are filiform or threadlike, and often eleven-jointed. These insects compose the genus *Coccus* (or scale insects). The bark of many of our trees appears often warty, by reason of a great number of small oval or rounded bodies, like a shield or a scale, which are fixed to them, and in which no external traces of the insect

are to be observed. They nevertheless belong to this class of animals, and to the genus *Coccus*.

The *Cocci* appear to injure the trees in causing by their punctures a too abundant overflowing of the sap. Hence they require the attention of those persons who cultivate peaches, oranges, figs, and olives. Some species attack the roots of plants, some are precious on account of the splendid scarlet colour they furnish for the dyer. Further researches on these insects might detect others equally useful in this respect.

The female of *Coccus cacti* (the cochineal insect of commerce) is of a dark brown colour, covered with a white down, flat beneath, convex above, margined, with the segments rather distinct, but becoming obliterated at the period of oviposition. The male is of a dark red, with white wings. It is cultivated in Mexico upon a species of cactus or opuntia, and is distinguished by the name of *Mestique*, or fine cochineal, from another closely allied species, smaller and more cottony, called the wild cochineal. It is celebrated for the crimson dye that it produces; it also furnishes carmine. This production is one of the chief riches of Mexico.

Coccus Polonicus (or the scarlet grain of Poland) was also employed in that country as a considerable

object of commerce, before the introduction of the *Coccus cacti* as a dye. It lives upon the roots of *Scleranthus perennis*, and some other plants. The colour produced from this species is almost equal to that of the *Coccus cacti*. A species from the East Indies produces gum lac, and another is employed in China for the manufacture of wax tapers.

Insect changes.—The metamorphoses of the insect race offer very curious and wonderful natural phenomena for contemplation. "We see," says an old author, "some of these creatures crawl for a time as helpless worms upon the earth, like ourselves; they then retire into a covering, which answers the end of a coffin or a sepulchre, wherein they are invisibly transformed, and come forth in glorious array, with wings and painted plumes, more like the inhabitants of the heavens than such worms as they were in their former state. This transformation is so striking and pleasant an emblem of the present, intermediate, and glorified states of man, that people of the most remote antiquity, when they buried their dead, embalmed and enclosed them in an artificial covering, so figured and painted as to resemble the caterpillar in the intermediate state; and as Joseph was the first we read of that was embalmed in Egypt—where this custom prevailed—it was probably of Hebrew origin."

We may easily perceive in the caterpillar a faint and imperfect symbol of the metamorphosis awaiting our own frail bodies, with the many intermediate degrees of corporeal and spiritual perfection, resulting in one universal chain of being.

Among the Apterous insects we shall notice the jigger (*Pulex penetrans*). Its beak is of the length of its body; it introduces itself under the nails of the feet and hands, and the skin of the heel particularly; other parts of the feet and hands are also attacked by this insect, but not so frequently as the before-mentioned parts. No vigilance can prevent the attacks of the jigger; even the stockings and shoes of Europeans are not proof against the insidious assaults of this tiny flea; the very cleanest persons of the highest rank in society are obliged to have their feet examined regularly. The presence of a jigger beneath the skin, during the process of its gradual increase, commonly produces a titillation, rather pleasing than painful; but as no pain is felt till the sore is produced, the extreme laziness of the lower order of the blacks frequently makes them neglect the precaution of extracting them, till all kinds of dirt getting into the wound increases the difficulty of a cure, and sometimes the consequence is lameness for life.

The blacks, from mutual practice on each other,

are quick at discovering, and skilful in extracting them. The 'operator begins with a short needle to open and widen the minute orifice in the cuticle, between which and the cutis vera (true skin) the swollen body of the pregnant female has taken its place; slowly and cautiously the depredator is exposed, until at length he removes the insect uninjured, without giving any pain, or drawing the least drop of blood.

The great danger to be guarded against is the rupture of the delicate skin of the jigger's abdomen, stretched and attenuated as it is by the great increase of its contents; if this should occur, the nits would escape into the wound, and produce a dreadful ulcer; such, however, is the skill of the sable practitioners, that it very rarely occurs. After the operation, a little grease and the ash of tobacco is rubbed into the empty cavity. There are two species of jigger, the white, and the green or poison jigger, both of which are very numerous and annoying.

Among the numerous family of the Coleoptera we have a species of the genus *Anobium*. *Anobium pertinax* is of uniform brownish-black colour, and is very common in our houses. The two sexes in the season of love have the habit of calling one another by beating with the mandibles upon the

wood-work on which they are stationed, for a succession of times, mutually answering each other. This noise, similar to the accelerated beating of a watch, has occasioned their receiving the vulgar name of death-watch.

We find among the family of the Orthoptera, a species of the genus *Forficula*—the earwigs—*Forficula auricularia*; the body is elongated, ferruginous brown, shining, with a reddish head; the female guards her eggs with much care, as well as her young, for a considerable time.

Also, the well-known genus *Blatta*, or cockroaches. Two species of the genus are very commonly known here: 1st, the *Blatta orientalis*—the body of which is of a deep brown colour, of a soft texture, head small, almost triangular, elytra and wings a little longer than the body; has six legs, feet spinous; it sheds its skin once a year, when it obtains wings, but does not make much use of them. 2nd, the *Blatta occidentalis* is a larger species of cockroach; it is termed hard-back; a very disgusting looking animal.

The animals belonging to the class *Arachnides* (or spiders) differ from the *Crustacea*, in having their respiratory organs always in the interior of the body; and also, from the insects in not undergoing a metamorphosis. Some live on land, others in the

water, and a third group are parasitical, and live on different animals.

The terrestrial species are in general solitary animals, and of a forbidding aspect; many of them shunning the light, and living in concealment. Several of these are poisonous, and their bite dangerous. Many have mandibles, which exercise the office of a sucker, and others have an isolated sucker, often, however, joined with mandibles and palpi.

The genus *Scorpio* (scorpions) furnishes a species known in these islands as the *Scorpio afer*. The body is blackish, with the joints of the feet and antennæ white. It grows sometimes to the length of four or five inches, but when they breed in houses they do not then attain above half the size before mentioned.

Among the species termed, by Latreille, sedentary spiders, we shall notice the silk spider (*Tetragnatha extensa*). The body is of a light brown colour, with diagonal stripes of green, its fore feet of a yellowish colour. It is about two inches in length. Its legs are very long and slender, the first pair longest, then the second, and afterwards the fourth. It spins a large silky web of very firm texture, equal, if not superior, to that of the silk-worm, but which is put to no manner of use in Bermuda. This species is common in our woods. They make their webs with

regular meshes, arranged in concentric circles, crossed by straight radii extending from the circumference, and meeting in the centre, where the insects remain stationary and in a reverse position. They have the external spinnerets nearly conical. The jaws are straight, and perceptibly wider towards their upper extremity.*

* Appendix E.

CHAPTER XIV.

SHELLS.

Crustacea—Cancer Pagurus—Gelasimus vocans—Genus Maia—
 Genus Calapa—Genus Ranina—Mollusca (or Shells)—Cir-
 culation—Organs of respiration—Form of the body in the
 Mollusca—The nervous system, &c.—Octopus cephalopoda—
 Sepiaria—Pteropoda—Gasteropoda—Pulmonea—Testacella—
 Vitrina—Helix—Pupa—Clausilia—Bulimus—Achatina—Suc-
 cineæ—Aquatic pulmonea—Genus Limnæus—Genus Physæ—
 Genus Auricula—Nudibranchiata—Genus Tritonia—Infero-
 branchiata—Genus Ancylus—Rectibranchiata—Bullæa—Hete-
 ropoda—Genus Carinaria—Pectinibranchiata—Trochoides—
 Trochus zizyphinus—T. cinerarius—T. maculata—T. jujubinus
 —Genus Turbo (or Periwinkles)—Turbo littoreus—T. chry-
 sostomus—T. pica—Genus Phasianella—P. Rubeus—Genus
 Nerita—N. peloronta (or bleeding tooth)—N. versicolor—
 Capuloides—Genus Crepidula—C. onyx—Buccinoides—
 Genus Conus—Genus Cypræa (Cowries)—C. pediculus
 —C. coccinella—Genus Colombella—C. mercatoria—Genus
 Buccinum (the Whelks)—B. undatum—B. lunatum—B.
 reticulatum—Genus purpura—P. patulata—P. lapillus—Genus
 Cassis—C. rufa—C. testiculus—C. flamnea—Genus Strombus—
 S. gallus—Tubulibranchiata—Genus Vermetus—Genus Ma-
 gilus—Scutibranchiata—Genus Fissurella—F. Græca—Genus
 Emarginula—E. Fissura—Cyclobranchiata—Genus patella (or
 Limpets)—P. pellucida—Genus Chiton—C. marginatus—Acephala—
 A. testacea—Genus Ostrea (the Oyster)—O. folium—
 O. crista galli—O. parasitica—Genus Pecten—P. concentricus

(or Scallop)—Genus *Arca*—Arcacea (or Ark Shells)—*Arca Noe*—*A. barbata*—Genus *Lima*—*Lima glacialis*—Mytilacea—Genus *Mytilus*—*Mytilus exustus*—*M. elongatus*—Carnacea—Genus *Chama*—*Chama arcinella*—Cardiacea—Genus *Cardium* (the Cockles)—*Cardium lævigatum*—*C. unedo*—*C. cardissa*—Genus *Tellina*—*T. radiata*—*T. depressa*—*T. tennis*—Genus *Venus*—*Venus gemma*—*V. granulata*—*V. plicata*—Genus *Cytherea*—*C. tigerina*—*C. castrensis*—Genus *cyclas*—*C. cornea*—*Mya*—Genus *Mya*—*M. arenaria*—*M. truncata*—Genus *Anatina*—*Mya globulosa*—Genus *Solen*—*Solen endis*—Genus *Teredo*—*T. navalis*—*Acephala nuda*—*A. Segregata*—Genus *Ascidia*—*A. rustica*—*A. lobifera*—*A. Aggregata*—Genus *Pyrosoma*—*P. Atlanticum*—Brachiopodes—Cirrhopodes—Genus *Anatifa*—*Lepas anatifera*—Genus *balanus* (or Acorn Shells)—*Balanus tintinnabulum*.

CRUSTACEA (or Crabs.)—The *Crustacea* are generally carnivorous, feeding on dead or decomposed animal matters. Some are constantly fixed on cetaceous animals, aquatic reptiles, and fishes. The greater portion live in the sea, at different depths, and in localities proper to their various habits; others are found in fresh water, or on land. Those which have fin-like feet swim on their side or back, and the greater part of the others walk sideways or backwards; some run with extreme rapidity, and others are constructed for climbing trees. Many species afford an agreeable food, and are taken for this purpose in numbers, or for bait.

The members of the *Crustacea*, when injured or disabled, are speedily reproduced, and they change their crustaceous covering annually.

The single genus *Cancer* (according to Cuvier) comprising the numerous species of crabs, is divided into sections. Of these, the majority have the legs attached at the sides of the breast, and always exposed. The species thus characterized constitute the first five sections—*Pinnipedes*, *Arcuata*, *Quadrilatera*, *Orbiculata*, and *Trigona*.

Amongst the first section (*Pinnipedes*), we may especially mention a species of swimming crab (*Lupa forceps*). It is very active and fierce, extending its open claws in a threatening manner when danger is near; but if allowed to escape by swimming, it does so rapidly, bending up the claw of the side which happens to be foremost, and allowing the other to stretch out behind. Probably this is the arrangement in which these unwieldy members offer least resistance to the water in progression.

In the second section (*Arcuata*), we find the common edible crab (*Cancer pagurus*) of Bermuda. During the summer months it is very abundant in our bays. The carapax is granulated, and arched along the sides, with nine folds on each side, and the middle in front, with three short teeth.

The third section (*Quadrilatera*) have the carapax almost square, sometimes heart-shaped, widened and rounded at the anterior angles, and truncated trans-

versely at the posterior extremity; front advanced, and more or less inclined; none of the feet terminated by a fin.

In this section we find the genus *Gelasimus*—the typical species is the calling crab (*Gelasimus vocans*). This species of land-crab has the carapax smooth, entire, sinuous anteriorly, and nearly quadrilateral, but rather broader in front; right claw generally larger than the left, the fingers of the smaller claw being spoon-shaped; colour, soiled brown above, with a bluish-green mark on the anterior part of the shell. This species burrows oblique and very deep holes in our marshes near the seashore with its large claw; in its movements, which are very rapid, it holds up the large claw in front of the body, upon the slightest alarm, and extends the fingers in a menacing attitude. This bold demeanour has doubtless given rise to the name of *Soldier crab*. It has also obtained the name of calling crab, from its habit of holding up the large claw in front of the body, as though beckoning to some one.

The fourth section (*Orbiculata*) have the carapax somewhat orbicular, or ovoid, and always very solid. To this section belongs the genus *Leucosia*. The animal which forms the type of this genus is the *Leucosia braniolaris*: shell smooth above, depressed

on each side before, with the anterior margin crenelated, front slightly advanced, tridentate, arms warty, length five inches.

The fifth section (*Trigona*) have the carapax generally triangular or subovoid, with the anterior extremity narrowed and pointed, ordinarily very rough and uneven, with the eyes lateral; claws often larger in the males than in the females. Many of these crabs are commonly called Sea Spiders.

In this section we find the genus *Maia*. The animals of this genus live on rocky or muddy shores around Bermuda, and conceal themselves among fluci. The type of this genus is the *Maia squinado*.

Another species common to Bermuda is the *Hyas araneus*, belonging to the genus *Hyas*.

The sixth section comprise the *Cryptopoda*. A few species of the animals of this section withdraw their feet within the vaulted margin of the shell when at rest, with the exception of the large claws. Belonging to this section we find the genus *Calapa*. Of this genus we find only one representative around our shores—the *Calapa granulata*.

The seventh and last section—the *Notopoda*—is formed of crabs having the two or four posterior feet inserted on the back, or above the line of the others. In the *Notopoda* we find the genus *Ranina*.

The animals of this genus differ from all other *Brachynra*, in having the abdomen extended; and from the other *Notopoda*, in having the six intermediate legs terminated by oval plates or fins. Shell, wedge-shaped, or oblong; truncated anteriorly. The typical species most common around our shores is the *Ranina serrata*.

MOLLUSCA (or Shells).—The mollusca, or shells and shell-fish, as they are usually called, although several have no shells or calcareous coverings, present many objects of interest to the naturalist, and are not unimportant in their various uses to man.

As the great vertebrate division includes the four distinct classes of beasts, birds, reptiles, and fishes, so does the great division of mollusca contain six classes, distinguished by characters which I shall presently enumerate.

It has been observed, as a distinction between the vertebral and the invertebral animals, that while in the former the bones or hard parts are more or less formed of phosphate of lime, the hard parts of the latter, such as the shells of the mollusca and crustacea, and the stony matter of corals and madrepores, are chiefly composed of carbonate of lime.

The Mollusca present every kind of mastication and deglutition; their stomachs are sometimes simple,

sometimes multiply, often furnished with peculiar armatures, and their intestines are variously elongated. They have, in general, salivary glands, and always a liver of considerable size, but no pancreas or mesentery; several have secretions which are peculiar to them.

The food of the mollusca consists of almost all sorts of substances, animal and vegetable—in all states, living or dead, fresh or putrid; but each species is in general confined to a certain kind.

All the senses common to the higher animals are found in the mollusca, though some are, doubtless, wanting in the humble classes of the division. In the *Cephalopoda*, the organs of sight and hearing are distinct and well-developed; and Professor Owen is of opinion that the *Nautilus*, an animal of this class, possesses an organ of “passive smell.”

The *Gasteropoda* are almost invariably furnished with eyes; and, according to M. Siebold and other zoölogists, have ears—a pair of round capsules, placed near the bases of the tentacles, and enclosing one or more crystalline globules, called otoliths. Some of the *Conchifera* are furnished with numerous eyes placed among the tentacles, examples of which are found in the claws and scallops (*Pecten*) of our own shores.

The circulation is complete in the mollusca. The heart is situated, in general, in the back, above the intestinal canal. It is not contained in a true pericardium, but in a muscular cell of the imperfect diaphragm which separates the visceral cavity from the branchia.

The organs of respiration vary considerably, not only with respect to their form and the place which they occupy in the animal, but also with respect to structure.

The form of the body in the mollusca is extremely various. It is frequently oval, more or less elongated, convex above and flat beneath, as in the genera *Doris*, *Limax*, &c. It is also sometimes oval, and equally convex above and below, as in the *Sepiæ*; elongated and cylindrical, as in certain *Loligines*; globular, as in the *Octopodes*. It is often more or less compressed on the sides, as in the *Scyllææ*. In very many cases a large portion of the body is rolled up in a spiral form. A considerable number of these animals present a very distinct separation between the head and the rest of the body, as in the *Octopodes*; this distinction is sometimes much less marked, as in the genus *Doris*. The distinction of neck, breast, abdomen, and tail is still less obvious, the body forming only a simple mass.

The nervous system consists of a central part or brain, situated above the intestinal canal; of ganglia for the different organs of sense, as well as for the locomotive apparatus; of a few visceral ganglia, together with conducting filaments or nerves.

To the first class of Mollusca belongs the *Cephalopoda* (or head-footed). The fleshy, flexible feet are instruments of locomotion, the animal being enabled to crawl awkwardly upon this circle of feet head downwards. But their chief use to the animal is as organs for seizing and holding prey, and for this purpose they are eminently qualified. Each arm is furnished with a double row of sucking disks, each of which, on being applied to any surface, adheres to it at the will of the animal with immense force, so that it is easier to tear away the substance of the limb while the creature maintains its hold, than to release it from its attachment; and even after death the suckers continue to retain a considerable power of adhesion.

The skin of these animals, particularly of the *Octopus*, changes colour, in patches and in spots, with a rapidity greatly superior to that of the chameleon.

These animals are voracious and savage; and as they are agile, and are furnished with numerous

organs for seizing their prey, they destroy many fishes and crustaceans.

The animals of this order, which are found around the shores of Bermuda, naturally arrange themselves under three divisions, which are as follows:—

1. Naked Cephalopoda; no shell, either internal or external.
2. Monothalamous testaceous Cephalopoda: the shell unilocular, entirely external.
3. Polythalamous testaceous Cephalopoda: the shell multilocular, subinternal.

I. *Cephalopoda Sepiaria*:—

The Sepiaria are marine animals, some of which creep along the bottom, and others swim at large. They are all destitute of shell.

In the first division we meet with the two following genera around our shores:—

1. Genus *Octopus* (the Polypes).—Body fleshy, obtuse beneath, and contained in a sac, which is destitute of wings; no internal dorsal bone, or only a very small one; mouth terminal, surrounded with eight simple, elongated arms, furnished with sessile cups.

The only species known here is the *Octopus octopodia*. Body rounded, smooth, mantle connected with the head behind; suckers sessile, in a single row; arms six times as long as the body.

2. Genus *Loligo*.—The species known here is the *Loligo punctata*. The body is generally lengthened, more or less flattened, with the skin dilated on each side, so as to form a pair of wings or fins. Its usual mode of swimming is by dilating its body and filling it with water. The body is then suddenly contracted, and the water forcibly ejected, so as to propel it backward with great rapidity, shooting like an arrow through the water.

The animals comprising this genus have been celebrated from the earliest times for their singular property of surrounding themselves with an inky fluid, with which they envelop themselves to evade pursuit. They are carnivorous, destroying many fish and crabs.

II. *Cephalopoda monothalama* :—

This division contains only one genus, viz. *Argonauta*; but we have seen no species to represent it.

III. *Cephalopoda polythalama* :—

The greater portion of the shells of this division are fossils, and many of them very minute.

Only one species is known here of the genus *Spirula*, viz., *Spirula peronii*: shell white, fragile, about a quarter of an inch in diameter, with two or three spiral turns, which do not touch each other. The place of the partitions of the chambers within

are exhibited by circular grooves in the shell. The beautiful little shell belonging to this species is occasionally picked up along our shores after heavy storms.

To the second class of Mollusca belong the *Pteropoda*. This is a very small class, comprising a few species of curious structure. They swim, like the Cephalopoda, in the sea, but cannot fix themselves there, nor creep, from want of feet. They are all characterized by having a membranous expansion, resembling a large fin, on each side of the head. Some genera only are furnished with a thin, cartilaginous, or horny shell.

The only genus known here is the *Limacina*, which is represented by a single species—*Limacina helicalis*. Its body is terminated with a spiral tail, and is lodged in a very thin shell, of one whorl and a half. The shell serves the purpose of a boat; and when the creature wishes to swim on the surface, it uses its fins as oars.

To the third class of Mollusca belong the *Gastropoda*. Cuvier has given the name of *Gastropoda* to all the animals of this class which have a foot or muscular disk proper for crawling, whether this foot extends the whole length of the lower surface of the body, or adheres only to the base of the neck. The

Gasteropoda constitute a very numerous class, of which the slug and the snail give a good general idea. Some species of this class—few as compared with the great body—are naked, but the majority are protected by a shell, in some cases very thin, brittle, and glassy, in others somewhat horny, but more generally of a stony texture, and of great solidity and hardness.

The upper surface of the body of this class of animal is covered with a fleshy cloak, the edges of which usually project in a greater or less degree, overlapping the foot-disk and other organs. This is called the mantle, or cloak.

These shells are secreted by the mantle, which in one family—that of the Chitons—consists of several pieces; but in general it is simple, and takes the form of a hollow bone, produced in various degrees. In the limpets, which we see adhering abundantly to our sea-side rocks, the cone is low and nearly symmetrical; but in the great majority of this class the bone is greatly lengthened and twisted upon itself, so as to form a spire.

The species of Gasteropoda are very numerous around Bermuda, among which we shall briefly enumerate a few of the most interesting. We will follow Cuvier in his division of the class into the

following orders—the characters of which he has drawn from the position and the form of the branchiæ.

I. The *Pulmonæa*.—These animals breathe the atmosphere, receiving the air within a cavity, whose narrow orifice they can open and close at will: they are hermaphroditical, with reciprocal copulation; some have no shell, others carry one, which is often truly turbinate, but never furnished with an operculum. Many of the species inhabit fresh waters; but the greater number are denizens of the land—requiring, however, a damp atmosphere to preserve them in health and vigour. The aquatic species form, notwithstanding the element in which they live, no exception to the leading character of the order; they also breathe air, which they obtain by coming periodically to the surface.

Those of them which have no apparent shell, form 1. The genus *Limax* of Linnæus, or slugs, as they are more commonly known. The species known here is the *Limax cinereus*; they are very voracious, and destroy kitchen vegetables and ripe fruits in field or garden, wherever they are found.

2. The *Testacella*.—These animals resemble the slugs in all respects, with the exception of the shell, which is earshaped, and placed at the posterior extremity of the body. One species is found here,

living under ground, and feeding principally on earth-worms; viz. the *Testacella haliotidea*.

3. *Vitrina*: species *Vitrina pellucida*—shell minute, earshaped, slightly spiral at its summit; aperture large. When the aperture of the shell assumes a crescent-like figure, and the lunated aperture is wider than it is deep, the shells belong to *Helix*. In some, the shell is globular.

4. *Helix*.—Shell globular, spiral, varying very much in its form, and receiving the body more or less completely. The species observed here are not very numerous. *Helix concava* and *H. hortensis* are commonly observed. The great majority of the species deposit a number of eggs glued together into a mass, and concealed under rubbish, the bark of decaying trees, dead leaves, or moss, or beneath the surface of the ground.

5. *Pupa*.—The species are very small, living in moist situations, amongst mosses, &c. One species is very common here, the *Pupa chrysalis*; they derive their name from the resemblance of the shell in shape to the pupa or chrysalis of an insect. The animal resembles the *Helix*.

6. *Clausilia*.—*Clausilia papillaris* is a type of the genus, resembling the *Helix* in shape, but more slender.

7. *Bulimus*.—These animals are terrestrial, and some of them are remarkable for the size and stony hardness of their eggs. This genus is numerous in species, and may be represented by *Bulimus lubricus*.

8. *Achatina*.—We have a species, the *Achatina columaria*, one of the most remarkable of land shells; it is reversed, and the columella forms a winding pillar, visible within, quite to the summit of the spire. A small species found in the South Sea Islands is strung by the natives, and used for an ornament.

9. *Succinea*.—We have a species which we shall call *Succinea Bermudiensis*. Shell, ovate-oblong, very thin, pellucid, yellowish; spire short; aperture dilated.

The Aquatic Pulmonea have only two tentacula; they come ever and anon to the surface to breathe, so that they can only inhabit waters of inconsiderable depth; thus they live in fresh waters or brackish pools.

1. Genus *Limnæus* (the fresh-water snails).—The species observed here is the *Limnæa auricularia*.

2. Genus *Physæ*.—These animals are most frequently found on the under side of the leaves of aquatic plants; they have a very singular way of

adhering to the surface of the water with the shell downwards, and crawl in that direction with as much apparent ease as on a solid surface, and they will occasionally let themselves down gradually by a thread. This power of crawling under water against its surface is not wholly confined to this and the preceding species. The *Physa fontinalis* is a representative of the genus.

3. Genus *Auricula*.—The name is derived from a fancied resemblance to the ears of some animals. They are for the most part covered with an epidermis, but some are often delicately sculptured. One species is found here, near the sea-shore, *Auricula Mida*.

II. *Gasteropoda Nudibranchiata*.—These have neither a shell nor a pulmonary cavity, but their branchiæ, or gills, are exposed naked upon some part of the back. The animals of this order are remarkably elegant in their forms, which present great variety. Their motions are graceful and lively, their colours peculiarly brilliant, and their history and economy marked by points of great interest. They often swim in a reversed position, the foot applied against the surface, and made concave like a boat, and they assist their progress by using the edges of the cloak and the tentacula as oars.

We know of only one genus representing this order, viz. the *Tritonia*. The Mollusca which form this genus have the body oval-oblong. The species observed here is the *Tritonia arborescens*.

III. *Gasteropoda Inferobranchiata*.—These have nearly the habit and organization of the preceding order; but their branchiæ, instead of being placed on the back, resemble one or two long series of laminæ under the mantle, either surrounding the body, or on the right side only. The species are strictly littoral, being gasteropodous, and incapable of swimming.

Genus *Ancylus* represents this order; the species is the *Ancylus rivularis*. It is found adhering to stones and aquatic plants in ponds.

IV. *Gasteropoda Rectibranchiata*.—These have their branchiæ on the back, a little inclining to the right, composed of laminæ more or less divided, but not symmetrical, generally protected by expansions of the mantle, in which there is usually a small shell.

They are hermaphrodites, like the Nudibranchiata and Pulmonea; and resemble the Pectinibranchiata in the form of the respiratory organs, and, like them, live in the sea.

The genus belonging to this order is the *Bullæa*.

The shells of this genus are very simple in form; they are all slightly rolled up, without being spiral.

The only known species is the *Bullæa aperta*; shell somewhat rounded, pellucid, slightly striated transversely, and the aperture very large; it climbs aquatic plants well, but swims badly.

V. *Gasteropoda Heteropoda*.—These are distinguished from all other Mollusca by their feet, which, instead of forming a horizontal disk, are compressed into vertical muscular laminæ, which they use as fins. They swim horizontally, and can inflate the body with water in a manner which is not yet well understood. The only representative of this order is the genus *Carinaria*, and the species observed here is *Carinaria cymbium*.

VI. *Gasteropoda Pectinibranchiata*.—This order comprises almost all the univalve spiral shells, and many that are simply conical; it is consequently the most numerous in species. Cuvier arranges these Mollusca under several families, from the form of their shells, which appear to be in sufficiently constant harmony with those of their respective animals.

The first family of Pectinibranchiata,—the *Trochoides*—are recognized by their shell, being of a conical form, with the spire more or less elevated, and the base generally flat or concave, rarely convex.

The genera are as follows:—1. *Trochusidæ*. The species of this genus are the *Trochus Zizyphinus*, the *Trochus cinerarius*, the *Trochus maculata* (spotted *Trochus*), and the *Trochus jujubinus*; which last is remarkable for its peculiar colouring; the upper whorls being blackish, whilst the apex and two last are red or flesh-coloured. Many species are very iridescent at the mouth and under the epidermis.

2. Genus *Turbo*.—The species of this genus are the *Turbo littoreus*, or common periwinkle, which is used as an article of food, and is found on the shores in great numbers. The shells are often highly iridescent; and the mouth, in some species, as in the *Turbo chrysostomus*, is of a deep and beautiful golden colour. The *Turbo pica* is a very handsome species.

3. Genus *Phasianella*.—The shells of this genus are smooth, shining, without an epidermis, and ornamented with agreeable colours. The *Phasianella rubeus* is a beautifully coloured species.

4. Genus *Nerita*.—The *Neritæ* are all marine shells, solid, thick, and agreeably coloured. They are remarkable for their oblique columella, relative to the axis of the shell, which gives the opening a semicircular form. We have a familiar example of the genus in the *Nerita peloronta*. It is called

“bleeding tooth,” from the red appearance of the teeth on the inner lip. We have also another species, *Nerita versicolor*. Its shell is thick, transversely sulcated, and tessellated with red and dark spots in transverse rows; inner and outer lip toothed, and the latter striated within.

The second family of the Pectinibranchiata are the *Capuloides*. Cuvier divides this family into five genera. All of them have a widely open shell, scarcely turbate, without an operculum, and without emargination or canal. Genus *Crepidula* is the only representative of this family. The species known here is the *Crepidula onyx*. This is a curious and often a very beautiful shell, and of the most brilliant colour—black in the inside, with the little half-deck, as it may be called, of a beautiful white, and having the margin of the shell tinged with a rich brown.

The third family of the Pectinibranchiata are the *Buccinoides*. Cuvier groups this family into genera according to the length of the sinus or canal (when it exists), the greater or less width of the aperture, and the various forms of the columella.

The following genera belong to the *Buccinoides*, viz.: 1. Genus *Conus*, which is the most beautiful, most extensive, and most interesting of the spiral and unilocular univalves. It contains shells remark-

able for the regularity of their form and variety and elegance of their colours, and which are highly prized by collectors. They are all marine. Many species of this genus are marked with the most beautiful and extraordinary figures, some of them resembling Hebrew, Greek, or Arabic characters, and bearing a most exquisite polish; in other varieties the colours are arranged in almost endless shapes, being clouded, veined, marbled, dotted, striped, and banded in every kind of form. Many of them are very rare; and the specimen of the *Conus gloria maris* has been sold for as much as one hundred guineas. The famous *Conus cedo nulli*, formerly in the cabinet of Lyonnet, at the Hague, is said to have been sold for three hundred guineas.

2. Genus *Cypræa* (Cowries).—The shells of this genus are distinguished, if not for elegance of form, yet for beauty of colouring and richness of polish. The polish is preserved by the animal, while alive, enveloping the shell in a membraneous fold. The young shell presents the appearance of an olive, having the spire acute, the outer lip sharp, and both lips destitute of teeth. Many of the species, which in their perfect state are spotted, are when young transversely banded. We have found on our shores the *Cypræa pediculus* and the *Cypræa coccinella*.

When at rest, the *Cypræa* remains buried under the sand at the bottom of the sea at a short distance from the shore; it occasionally traverses the rocks and coast, and may be found under stones and corals.

3. Genus *Colombella*.—These are small, short, and in general prettily coloured shells. *Colombella mercatoria* is the only species of the genus known at Bermuda.

4. Genus *Buccinum* (Whelks) comprises all the shells furnished with an emargination, or short canal, bent to the left, and whose columella is not plaited.

The following species are generally found on our shores—viz. *Buccinum undatum*, *Buccinum lunatum*, and *Buccinum reticulatum*.

5. Genus *Purpura*.—The species are two: *Purpura patulata*.—It was from the animal of this species that the Roman purple dye was obtained. The shell is ovate, transversely sulcate, tubercular, reddish black; spire, shortish; aperture, patulous; columella, reddish yellow; outer lip, white within. The other species—*Purpura lapillus*—affords also a purple dye. The colouring matter occurs in a vesicular reservoir near the stomach. It is no longer used, however, the discovery of cochineal having furnished an abundant supply of equally beautiful and more easily procured colour.

6. Genus *Cassis*.—The shells of the *Cassis rufa*

and other species are exquisitely sculptured by Italian artists in imitation of antique cameos, the different strata of colouring matter resembling those of the onyx and other precious stones. Of these, a great variety of ornaments are made; and of late years a considerable trade has been carried on in them on the Continent.

We have a species very common in our bays, viz. *Cassia testiculus* and *Cassia flamnea*.

7. Genus *Strombus*.—The *Strombi* are distinguished generically from the right lip being much dilated and entire, and by the canal at the base being very short, truncated, or notched. *Strombus gallus* is an example of the genus. The shell is turbate, tuberculated, transversely sulcate, variegated with white and red; the last turn crowned above with large compressed tubercles. The tubercles are united by a transverse ridge. Lip thin, extended above into a long lobe. The animals of the *Strombus* occasionally produce pearls.

VII. *Gasteropoda Tubulibranchiata*.—Cuvier distinguishes these from the *Pectinibranchiata*, with which, nevertheless, they have many affinities, because their shell, in the shape of a more or less irregular tube, and only spiral at its apex, is permanently fixed to other bodies.

The genera are as follows:—1. Genus *Vermetus*, which is represented by the *Vermetus lumbricalis*. 2. Genus *Magilus*. The *Magilus antiquus* is the only species known in Bermuda. The animal establishes itself in the excavations of madrepores; and as the coral increases round it, the *Magilus* is obliged, in order to have its aperture on a level with the surrounding surface, or near it, to construct a tube, the growth of the coral determining its length.

VIII. *Gasteropoda Scutibranchiata*.—The shells in this order are very open, having no operculum, and the greater number are not in any degree spiral: so that they cover their animals, and particularly the branchiæ, in the manner of a shield.

The following are the genera belonging to this family:—1. Genus *Fissurella* have the perforation on the top of the shell, very much resembling a key-hole. This aperture is for the purpose of respiration, as the water thus communicates to the branchial cavity, which is placed, something like that of the *Doris*, on the forepart of the back. The *Fissurella Græca* is a familiar example of the genus.

2. Genus *Emarginula*, the *Emarginula fissura* being an example.

IX. *Gasteropoda Cyclobranchiata*.—The genera of this order are the following:—

1. Genus *Patella*.—The *Patella* (or Limpets) have the body entirely covered with a conical shell. We have an example of the genus in the species *Patella pellucida*.

2. Genus *Chiton*.—The Chitons crawl upon their feet or fleshy disks, and are attached to rocks and stones, like the limpets. They are found along our shores at no great depth. They have power of rolling themselves up into a ball, like the woodlouse or hedgehog. *Chiton marginatus* is an example of the genus.

To the fourth class of Mollusca belong the *Acephala*. The animals of this class are divided by Cuvier into two sections; the first, which is most numerous, contains all the bivalve and some of the multivalve shells. The other, *Acephala nuda*, comprises those in which the shell is replaced by a cartilaginous membrane.

I. First Order of *Acephala*: Testacea (or *Acephales* with four branchial leaflets).—The shells of this class are more or less inequivalve, and open by a hinge. A considerable number of bivalves possess what is called a byssus, that is, a bundle of more or less delicate filaments issuing from the base of the foot, and by means of which the animal fixes itself to foreign bodies. It employs the foot to guide the

filaments to the proper place, and to glue them there; and it can reproduce them when they have been cut away; but their true nature is not yet well ascertained.

The first family of the Acephala Testacea comprise the *Ostrea*, or oysters. As to the testaceous Acephales, known in a living state, Linnæus has united under the genus *Ostrea* all those which have neither teeth nor transverse laminæ in the hinge; the valves being held together by a ligament lodged in a little cavity on both sides. Among the species common to our shores, we may notice the *Ostrea folium*, the *Ostrea crista galli*, and the *Ostrea parasitica*.

To this family also belong the following genera, viz. :—

1. Genus *Pecten*.—The shells of this genus are in general of a depressed form, more or less inequivalve, always eared, and almost always rayed longitudinally by ribs more or less fine. The valves are in general thin, of the same size, the upper one being flattened. The species most usually found in our bays is the *Pecten concentricus*. This is known under the popular name of scallop, or scallop-shell.

2. Genus *Arca*.—The *Arcaceæ*, or ark-shells, are

distinguished from all the others by their numerous teeth, which have the appearance of those of a fine saw, and form a straight or curved continuous line. That handsome species, the *Arca Noæ*, is found here, the shell of which is strongly striated in a longitudinal direction, with the apices incurved and very remote; margin entire and gaping; colour whitish, with diagonal, parallel, zigzag chesnut stripes. The *Arca barbata* is another species, but smaller than the preceding.

3. Genus *Lima*.—The shells of this genus are all marine, and almost always white. The *Lima glacialis* is a species usually seen on our shores. The *Lima* swim rapidly by flapping their valves.

To the second family of the Acephala Testacea belong the *Mytilaceæ*. These are commonly known by the name of Mussels. The Genus *Mytilus* have the shell somewhat triangular. The species known in Bermuda are the *Mytilus exustus* and *Mytilus elongatus*.

To the third family of the Acephala Testacea belong the *Carnaceæ*. According to Cuvier, this family comprises only the genus *Chama*, the shells of which are generally found at no great depth. They are always seen attached by their larger valve to rocks or corals, or grouped together in various

forma. The only species known in Bermuda is the *Chama arcinella*.

The fourth family of the Acephala Testacea comprise the *Cardicea*, the greater part of which are furnished with longitudinal ribs, and have the shape of a heart when viewed anteriorly. To this family belong the following genera, viz:—

1. Genus *Cardium* (Cockles).—The species of cockle are numerous on our shores, among which we may notice *Cardium levigatum* (the smooth cockle), *Cardium unedo*, and *Cardium cardissa*. In the latter species the valves are flattened, but in a contrary manner to the generality of flat bivalves.

2. Genus *Tellina*.—The Tellinas are all attractive, from their beautiful colour and elegant shape. The species are as follows: *Tellina radiata*, *Tellina depressa*, and *Tellina tenuis*.

3. Genus *Venus* is one of the most beautiful among the conchifera. The following species are sometimes found:—*Venus gemma*, *Venus granulata*, and *Venus plicata*.

4. Genus *Cytherea*.—This genus resembles much the *Venus* in beauty and colouring, but the fourth cardinal tooth, which is supposed to distinguish it, is sometimes scarcely visible. The species are *Cytherea tigerina* and *Cytherea castrensis*.

5. Genus *Cyclas*.—The shells of this genus are not larger than a hazel-nut, and some of the species are very thin and transparent, striped transversely with light colours. *Cyclas carnea* is a familiar species.

To the fifth family of the Acephala Testacea, belong the *Myæ*, which comprise the following genera:—1. Genus *Mya*. These burrow in the sand, and project a long tube to the surface. The species most common on our shores are the *Mya arenaria* and *M. truncata*.

2. Genus *Anatina*.—The shells of this genus are distinguished from the *Myæ* by their having a spoon-shaped tooth in each valve, while the *Myæ* have only one. *Mya globulosa* is the most common species found near Bermuda.

3. Genus *Solen*.—The *Solen*, or razor-fish, has a shell in the form of an elongated cylinder. A few species, more especially the *Solen endis*, are found on our shores.

4. Genus *Teredo*.—The *Teredines* do much injury to the timbers of ships, perforating them in all directions, and rendering them unserviceable. *Teredo navalis* is a very familiar example of the genus.

II. Second Order of the Acephala: Shell-less Acephales (*A. nuda*).—The animals of this order,

according to Cuvier, form a group under the name of *Acephala nuda*, arranged immediately after the testaceous *Acephala*. Cuvier divides the order into two families, viz.:—

The first family of the *Acephala nuda* being the *Segregata*, and embracing the genera whose individuals are isolated and without mutual organic connection, although they often live in societies. Only one genus represents this family, viz.:—Genus *Ascidia*. The *Ascidia* live in the sea, fixed to rocks, shells, or marine plants. The species are *Ascidia rustica* and *Ascidia lobifera*.

The second family of the *Acephala nuda* comprise the *Aggregata*. These are more or less analogous to the *Ascidia*, but are always united, and constitute a common mass by their union. The *Pyrosoma* is the only known genus found here belonging to this family. The animals of this genus are gelatinous and transparent, and, placed horizontally in the sea, appear capable of executing slight movements. They are very phosphorescent, and during the darkness of night often exhibit masses of floating light of the most brilliant and varying colours. A small species is known in our harbours (*Pyrosoma Atlanticum*), in which the animals are arranged in very regular rings.

The fifth class of Mollusca embrace the *Brachiopodes*. There are no genera, to our knowledge, which represent this family.

The sixth class of the Mollusca comprise the *Cirrhopodes*. These animals are soft and destitute of head or eyes; they are testaceous, having the body fixed, and provided with a mantle; they have also tentacula, with curled tufts. The arms vary in number and are unequal in size; the shell is either sessile, or elevated on a flexible pedicle, and it is composed of several valves, which are sometimes moveable, sometimes fixed.

There are two genera to this family, viz. :—

1. Genus *Anatifa*.—This genus, as well as the following one, is found attached to ships, logs of wood, bottles, corks of nets, fuci, floating testaceous mollusca (the *Lantha*, for instance), and even to whales, turtles, and serpents. The most numerous species in our seas (*Lepas anatifera*, Linn.) derives its name from the opinion once seriously entertained, that it was the young of a kind of goose.

2. Genus *Balanus* (or Acorn Shells).—The shell of the *Balani* is immovable in all its external parts. It is of a conical shape, sometimes elongated; and is found adhering to rocks, stones, and marine bodies.

Balanus tintinnabulum is an accidental visitor of the Bermudan shores. Its shell is purplish, with the valves irregularly and strongly marked in a longitudinal direction, and the interstices delicately striated across their surface.

CHAPTER XV.

CORALS.

Polypifera—Alcyonium digitatum—Alcyonidium gelatinosum—
 Alcyonidium echinatum—Asteroidea—Fungia, or Sea-mush-
 rooms—Meandrina cerebriformis, or Brainstone coral—Gor-
 gonia—Isis hippuris—Gorgonia flabellum (or Sea-fan)—
 Flabellum Veneris (or Venus' fan)—Gorgonia anceps—
 Gorgonia verrucosa—Gorgonia placomus—Gorgonia lepidifera
 —Actinæ (or Sea-anemones)—Holothuræ (or Sea-slugs)—
 Mammalia—Balæna mysticetus—Balæna nodosa—Reptilia.

Corallidæ (or Corals).—The family of zoöphytes necessarily embraces many corals. They are as interesting as they are important to man, being, during the span of their existence, the original founders of many countries, in which, when nature has clothed them with luxuriant verdure, the human family subsist in affluence and abundance. When we see the profusion of fragrant vegetation and delicious food almost spontaneously produced in these lovely islands, it is startling to reflect that they are almost entirely formed by the cells of deceased

polypi, which, rising up in beautiful and delicate forms, displace the mighty ocean, defying its gigantic strength, and displaying a shelly bosom to the expanse of day! The vegetation of the sea, cast on its surface, undergoes a chemical change; the deposit from rains aids in filling up the little gaping catacombs; the fowls of the air and of the ocean find a resting-place, and assist in clothing the rocks; mosses carpet the surface; seed brought by birds, plants carried by the oceanic currents, animalculæ floating in the atmosphere, live, propagate, and die, and are succeeded by more advanced vegetable and animal life. This process continues while generation after generation is passing away; and at length these coral islands bloom out like a paradise, filled with the choicest exotics, most beautiful birds, and most delicious fruits—where man may indolently revel to the utmost desire of his heart!

Polypifera (Polypes). — Several species of zoöphytes, or polypes, are found in the water around the smaller islands. The *Alcyonium digitatum* (which signifies *toes*, or *claws*) is one of the commonest of the polypes, being attached to almost every stone or shell brought up from the bottom of the sea. Sometimes it is very small, but when larger, it is

named by the fisherman *cow's-páps*; and others, which differ a little in form, are called *dead-men's toes*, or *dead-men's hands*.

Alcyonidium Gelatinosum.—This is found attached to old stones and shells, and is a jelly-like, transparent, spongy zoöphyte, growing to a height of nearly a foot, sometimes much longer. It is branched, and of a brown colour, dotted with polypes, which are attached to the cells, and through angular openings they protrude their arms or feelers.

Alcyonidium Echinatum.—This parasite incrusts dead univalve shells exclusively, and is about one-twentieth of an inch in thickness. When taken out of the water, it is soft and spongy, but becomes rigid on drying. It has little sharp-pointed, spinous, nipple-like protuberances.

Asteroida.—The next order of zoöphytes that claims our notice is named *Asteroida*, from the polypes presenting the form of a star on the surface of the fleshy mass in which they reside. Their organization is superior to those previously described; there being this difference, that instead of the animal domiciling in a hard cell, it exists in a fleshy, tough crust, which is supported by hard, calcareous spicula; and others have thick branching processes, which

perform the part of the skeleton in the human frame. This central internal support is usually denominated the axis. The fleshy mass, or covering, possesses sensation, and is ramified by various tubes and canals for the sustenance and other vital functions of the polypi. The *Asteroida* are frequently thrown on the sea-shore, and when dried by the sun the skeleton weighs but a few grains.

Allied to the *Turbinolia* and *Caryophyllia* are the *Fungia*, or sea-mushrooms. These elegant forms are found in a great variety; the corals are white, of a flattened, round shape, made up of thin plates or scales, around which is a translucent, jelly-like substance, and amidst it a large polype; for, unlike others, they exist as individuals; the lower part is of a strong nature, by which the animal is affixed to the rock whereon it lives.

Another very abundant coral around our islands is the Brainstone coral, or *Meandrina cerebriformis*,—so named from its surface resembling the convolutions of the medullary matter in the human brain. It attaches itself by a strong stony secretion to rocks.

Gorgonia.—The *Gorgoniæ* are found widely diffused around the reefs of Bermuda; they appear to dwell usually in deep water; when observed in shallow water, their colours are richer, deeper, and brighter.

The Gorgoniæ are flexible, and seem like plants growing from the rocks to which they are fixed. Some are branching, and covered with lace-like work; others are like a feather or a fan; while some, again, are straight, and some of a drooping form. The stems are flat, angular, or round, and of a dark colour, with an outer crust of a soft substance, full of pores, out of which the polypes thrust themselves.

When a dry branch is macerated in mineral acid, a considerable proportion of carbonate of lime is entirely removed, without altering the original size and figure of the branch: this shows the framework to be an irregular close texture of corneous fibres, the interstices of which had been probably filled in part with a gelatinous fluid.

Isis hippuris is the type by which this family is illustrated. It has a jointed stony stem, which rises into many loose branches. The bone or support of the animal consists of white, cylindrical, stony-channelled joints, connected together by black, contracted, horny, intermediate ones. The flesh is whitish, plump, and full of minute vessels; the surface of it is full of the little mouths of the cells, which are disposed in a quincunx order, covering the polypes with eight claws.

There are also the *Gorgonia flabellum*, sometimes called the Sea-fan, Flabellum Veneris, or Venus' fan. It grows in the form of a net, with its branches compressed inwardly. The bone is black, horny, and slightly striated on the large branches.

We have many other beautiful species ; among which, we shall describe the following :—

The *Gorgonia anceps* is branched nearly in a subdivided manner. The bone is roundish, being small at the ends, of a horny nature, somewhat inclining to leather. The *Gorgonia verrucosa* is much and irregularly branched, the branches spreading laterally, being cylindrical, flexuous, barked when dry with a white warted crust. The segments of the cells are unequal and obtuse. The *Gorgonia placomus* has irregular branches, which are disposed in a dichotomous order, of a flattish form, cylindrical, and warty ; the cells are protuberant and conical, and are surrounded at the top by little spines. The *Gorgonia lepidifera* is dichotomous ; it is almost covered with mouths, which are placed close together, hanging over one another. These mouths are bell-shaped, bent downwards, and full of small scales. The flesh is covered with minute whitish scales. There is in the larger branches testaceous substances like bone, and the smaller ones resemble horn.

Around Hamilton Harbour, and the sea-shore generally, we frequently observe the *Actiniaz*, or "sea-anemones." These polypes have the body fleshy, often brilliantly coloured; and the tentacula are arranged in several rows round the mouth, somewhat like the petals of a double flower. They are very sensitive to light, and expand or close their tentacula according to the fineness of the day. When the tentacula are retracted, the aperture from which they proceed closes like the mouth of a purse, and the animal appears a simple fleshy tubercle, adhering to the rock. Many *Actiniaz*, when their tentacula are expanded, have as gay an appearance as the flowers of almost any plants.

Besides the above-mentioned, the *Holothuriz* (sea-slugs) are very numerous, and many of them are splendidly coloured; so that, together with the Radiata, they make the sea-bottom, when seen by the light of an almost vertical sun, look as gay as a tropical garden.

A remarkable feature of Bermuda is the paucity of its mammalia—of the wild animals. There are three indigenous species of rats properly so called (*Mus*, Cuv.) The water-rat is very common (*Mus*

amphibius). The fur is blackish gray, slightly mixed with yellow, and lighter beneath; the tail is black. It is a little larger than the common rat. There is also the *Arvicola alliarius* (Desm.), which is about four inches long; fur, ash-coloured above, white beneath; ears large, almost naked. Lastly, the *Arvicola socialis* (Desm.), (*Mus gregarius*, Linn.); fur, pale gray above, white underneath; ears short, broad, almost naked. About $2\frac{1}{2}$ inches long; tail, one inch.

In the order *Cetacea* we find the common whale (*Balæna mysticetus*, Linn.) This species seems gradually diminishing in number as well as in size. The species most usually captured on our coast is the hunchback (*Balæna nodosa*, Desm.) The flesh of this whale, when properly cooked, is very wholesome for consumptive persons, and is considered a great luxury by the native blacks.

We find, then, that the only representatives of the class *Mammalia* are the rat tribe and the whales among the wild animals.

In the class *Reptilia* (reptiles), we find the order *Chelonia* (the turtle tribe). This order is represented by the green turtle (*Chelonia mydas*, Holbrook); and the hawk's-bill (*Chelonia carretta*, Holbrook) is more or less brown or rufous.

In the order *Sauria* we have the lizard tribe. The saurian reptiles are distinguished from the chelonian by the want of a shield and by the presence of teeth. The blue-tailed skink (*Scincus nasciatus*, Holbrook) and the *Scincus ocellatus* (Da.) are representatives of this order. The *Scincus ocellatus* burrows in the sand so quickly that it is out of sight in an instant, and appears rather to have found a hole than made one.

In the class Reptilia, we have had occasion to name but a few genera and species; so barren are these islands in that class of animals which respire by lungs, having red and cold blood, and bodies covered with horny or cartilaginous plates, or with hard scales.

CONCLUDING REMARKS.

IN the preceding pages I have endeavoured to give an honest and correct general account of the Bermudas, from the period of their settlement to the present time. The original formation of the islands is a matter of doubt, unless, indeed, they may be considered as the remains of the vast continent (*Atlantis*) which tradition informs us was, with its immense population, submerged in the ocean, after being shaken for three days by the incessant and hourly increasing concussions of an earthquake.*

It may be necessary to notice one great evil existing in Bermuda, which arises from the minute subdivision of land. Modern writers on Political Economy mention the subdivision of landed property as the principal cause of the poverty and barbarism which have long prevailed in Ireland: the misery proceeding, not from the smallness, but from

* This is the recorded tradition of Plato and the ancients.

the uncertainty of the tenure; and the land being so parcelled out, as barely to suffice, even in the growth of potatoes, to sustain the occupier's family. The poor are then made to outbid one another in the price at which they may obtain possession—the term being so short, and the rent so high, that the object of the occupier is not to improve the spot, but to procure a miserable existence for the year.

In Bermuda, the interest of the occupier in the soil is also limited and precarious; hence, as in Ireland, the general discontent of the poorer agricultural classes. Improvement is not, therefore, to be expected, until a permanent interest in the soil is afforded to the tenant.

Nevertheless, throughout Bermuda there has been remarkable progress in agriculture during the last fifteen years. The following statistics of the cultivation of the potato, at three distinct periods, go far to prove the fact:—

In the year of 1843, the quantity of potatoes raised in Bermuda was 13,436 bushels. Eight years afterwards, namely, in 1851, the growth of the same esculent had increased to 24,946 bushels, or, in other words, had just doubled. Six years later, in 1857, the quantity rose to 97,500 bushels—nearly

four times the production of 1851, and more than seven times that of 1843. We need no further evidence to show what can be accomplished with industry in the culture of but one product—the Irish potato.

The remark of a late author, to the effect that the capabilities of this colony cannot be much further developed, is merely the reverse of true. There are hundreds of acres of the finest arable land still lying in a state of barrenness; in fact, there is no reason why the colony should not be raised to a high degree of wealth by infusing into the colonists a better spirit of agricultural enterprise.

During the past year we have witnessed the arrival of numerous steam-vessels, from ports to the south of these islands, for the purpose of procuring fuel for the completion of their voyage to Europe. This fact tells strongly in favour of Bermuda as a convenient stopping place for steamers plying between America and Europe.

We had hoped that the magnificent project of the Atlantic Electric Telegraph would not have proved a failure: and that the Old World and the New would have been linked ere now in ties of amity and friendship which no future disagreement should

ever interrupt. Three quarters of a century ago, England had sought, by means of the sword, to win back her intractable American colonies; and it was a thing earnestly to be desired, that the peaceful victories of intellect and science might be able to effect, in a far different manner, that which brute strife had failed to accomplish;—binding free America to the mother country in a union closer and more lasting than had ever existed before. We had fondly trusted that this close alliance of Britain and America would be the means of connecting all parts of the world, and of incalculably hastening the triumphs of Christianity and of civilization. The people of Bermuda still eagerly look forward to this glorious consummation;—since it is closely connected with the future advancement of these islands; but it remains for them to turn all their resources to account, so as to prove to the foreigner that it is to his own advantage to visit these shores:

“ Those leafy islets on the ocean thrown,
Like studs of emerald on a silver zone.”

It was a lamentable act of the Home Government, when, with the view to perform a laudable deed in favour of free trade, it so seriously compromised the character of great and free England, by inflicting

untold miseries on our sugar colonies, which were just then emerging from a state of bondage into liberty. The inconsistency of abolishing slavery in the British dominions is seen in the importation of slave-grown sugar, and the levelling competition with slave-employing countries, over which the British Parliament has cast its shield. The present Government appears disposed to do something for our colonies; and if our colonists would only put their shoulders to the wheel, forgetting their old grievances and local differences, and looking upon their interests as identical, they might excite the favourable attention of the British Parliament. Were the *vox populi* universally heard, no Government could resist it. There is wisdom, benevolence, courage, public spirit enough in England to wipe out the foul blot of free trade, as affecting her colonies, from British legislation.

To go about the work in a business-like manner, deputations from each colony should be sent to England, where a regularly organized congress might be held. And there is no doubt but that our amiable Queen would give her royal assent most gladly to any measure which should have for its object to relieve the unprecedented injustice in-

flicted on her loyal and much attached trans-Atlantic subjects.

Although sugar is not the staple product of Bermuda, yet free trade, as before noticed, exerts a very baneful influence on the colony. Notwithstanding this, however, there is every reason to believe that with greater advancement in agricultural industry, and a more rapid communication established with the United States by means of steam-vessels, the islands may, ere long, be rendered very prosperous.

APPENDICES.

APPENDIX A.

Temperature of Bermuda.—Range of the Barometer and Thermometer, Average for Four Years.

		Barometer.	Thermometer.
Maximum	...	30·480	85·85
Minimum	...	29·236	49·00
Mean	...	29·858	28·25
Oscillation or range	...	1·244	35·05

APPENDIX B.

A List of Acts, passed by the Legislature of Bermuda, during the Session which commenced on the 20th day of May, 1858, and ended on the 6th day of October, instant, viz. :—

1. An Act to continue the Acts to establish Regulations for the performance of Quarantine, and certain other Acts in addition to and amendment thereof.—In force to end of 1869.
2. An Act to continue the Act for the Regulation of the

Public Gaols, and certain Acts in addition to and Amendment thereof.—In force to end of 1869.

3. An Act for raising a Revenue for the support of the Government of these her Majesty's Islands, and to appropriate certain Sums to the discharge of the Expenses of Government as therein expressed.—In force to 30th of June, 1859.

4. An Act to continue the Act intituled "An Act for the safe custody of Insane Persons charged with Offences."—Indefinite.

5. An Act to continue and amend the Act for the regulation of an Hospital for Insane Paupers, and certain other Acts in addition to and Amendment thereof.—In force to end of 1869.

6. An Act to amend and continue the Acts regulating Prison Labour.—In force to end of 1865.

7. An Act to continue the Act for the summary Punishment of common Assaults and Batteries.—Indefinite.

8. An Act to continue and amend the Act for the better regulation of Vestries, Constables, and Churchwardens in these Islands.—In force to end of 1868.

9. An Act to amend the Law relating to the Election of Members to serve in the General Assembly.—Indefinite.

10. An Act to continue and amend the Act providing an annual Allowance for the Provost-Marshal General.—In force to end of 1863.

11. An Act to continue and amend the Act intituled "An Act relative to the Conviction of Offenders transported to these Islands from Great Britain, and other parts of his Majesty's Dominions," and certain other Acts in amendment thereof.—In force to end of 1868.

12. An Act to render transported Convicts liable to

additional Terms of Penal Servitude at the Convict Establishment at these Islands, in cases of Conviction of Offences within these Islands subject to Penal Servitude in the United Kingdom.—Indefinite.

13. An Act further to amend the Acts relating to Post Offices.—In force to end of 1860.

14. An Act regulating the Weight and Sale of Bread.—In force to end of 1860.

15. An Act to amend the Act "Providing an Allowance for the Maintenance of Persons imprisoned for Debt."—In force to end of 1860.

16. An Act to aid in the Establishment, and to provide for the Inspection, of Public Schools.—In force to end of 1860.

17. An Act to amend an Act intituled "An Act to continue the Act to maintain a Light House," and certain other Acts in amendment thereof.—In force to end of 1868.

APPENDIX C.

Total Value in Sterling Money of the Imports and Exports of the Colony of Bermuda, from and to each Country in the Year 1857.

	Imports from				Exports to		
	£	s.	d.		£	s.	d.
UNITED KINGDOM ...	41,026	15	11	...	4,728	0	0
BRITISH COLONIES:—							
Halifax ...	6,144	0	0	...	656	18	2
Prince Edward Island	1,050	18	0	...	203	0	0
Newfoundland ...	28	0	0	...	—		
Demerara ...	5,834	7	3	...	1,170	9	0
Carried forward	54,084	1	2	...	6,758	7	2

BERMUDA.

		Imports from			Exports to		
		£	s.	d.	£	s.	d.
Brought forward		54,084	1	2	...	6,758	7 2
BRITISH COLONIES <i>cont.</i> :—							
Barbados	...	1,632	7	7	...	1,218	15 7
St. Vincent	...	13	7	0	...	331	2 0
Trinidad	...	1,244	8	10	...	327	5 0
Antigua	...	248	14	11	...	259	12 11
St. Kitts	...	442	6	0	...	216	4 0
Turks' Islands	...	301	9	2	...	503	12 1
Nassau	...	—			...	80	0 0
FOREIGN COUNTRIES :—							
St. Thomas	...	690	9	8	...	765	13 0
Porto Rico	...	3,304	7	8	...	1,039	7 0
Cuba	...	1,046	7	2	...	738	9 0
Hayti	...	1,272	7	0	...	—	
Dutch Guiana	...	304	2	0	...	—	
Brazil	...	869	14	0	...	—	
Oporto	...	481	8	3	...	—	
Egypt	...	426	0	0	...	—	
United States	...	70,552	12	11	...	22,571	10 9
Martinique	...	—			...	293	0 0
Total	...	136,914	3	4	...	35,102	18 6

*Number of Vessels entered Inwards and Outwards,
between 1st January and 31st December, 1857.*

		INWARDS.		
		Number.	Tons.	Men.
Hamilton	...	137	19,997	1,100
St. Georges	...	88	23,059	1,345
Total	...	220	43,056	2,445

		OUTWARDS.			
		Number.		Tons.	Men.
Hamilton	...	... 135	...	19,143	... 935
St. Georges	...	... 82	...	23,851	... 1,876
Total	...	... 217	...	42,994	... 2,811

Number of Vessels belonging to the Colony, with Amount of Tonnage and Number of Mariners. Year ending 31st December, 1857.

	Number.		Tons.		Men.
	33	...	3,250	...	240
New vessels	... 4	...	337	...	—

Exports of Vegetables,—1857 compared with 1858.

Produce.	Exported in 1857.		Exported in 1858.		Decrease.
Potatoes (barrels)	37,657	...	28,960	...	8,697
Tomatoes (boxes)	13,764	...	1,993	...	11,771
Onions (lbs.)	... 1,059,179	...	575,167	...	484,012

APPENDIX D.

Schedule of Duties payable at the Treasury Office, from 1st July, 1858, to 30th June, 1859, inclusive.

Arrowroot, unmanufactured, 10s. per 100 lbs.

Arrowroot starch, 6d. per lb.

Wine of all kinds, 20 per cent. on cost.

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No goods to be warehoused unless the duties amount to 5*l.*, or unless intended for ulterior market.

No goods to be taken out of warehouse unless the duties amount to 2*l.*, &c.

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Parties exporting goods are entitled, on certain conditions, to the whole of the duty paid on the importation thereof, when said goods are of the value of 25*l.* and upwards.

The auctioneers' bonds expire on the 30th June.

Light Duties.

4*d.* per ton on merchant-vessels.

Steam-packets carrying royal mails, and steamers coming to coal, exceeding 600 tons, 3*l.*; not exceeding 600 tons, 1*l.* 4*s.*

Store-ships and other vessels wholly employed in her Majesty's service are exempt from this duty.

APPENDIX E.

Some species of spiders are known to possess the power of not merely forming a web, but also of spinning, for the protection of their eggs, a bag, somewhat similar in form and substance to the cocoon of the silkworm.

At the commencement of the last century, Monsieur Bon discovered, in France, a method of procuring silk

from these spiders' bags, and its use was attempted in the manufacture of several articles. M. Bon has noticed only two kinds of silk-spiders, and these he has distinguished from each other as having either long or short legs, the last variety producing the finest quality of raw silk. M. Bon asserts that the silk formed by these insects is equally beautiful, strong, and glossy with that formed by the *Bombyx*. The spider spins minute fibres from fine papillæ, or small nipples, placed in the hinder part of its body. These papillæ serve the office of so many wire-drawing irons, to form and mould a viscous liquor, which, after being drawn through them, dries on exposure to the air, and forms the silk. An objection that has been urged by M. Réaumur against the rearing of spiders, was the small quantity, as well as deficient quality of the silk they produce. The advantages of the culture of silk from the silkworm, when compared with its production from spiders, are so prodigious, and at the same time so evident, that to prove the futility of M. Bon's scheme needs not the aid of exaggeration.

In the Mediterranean Sea is found the largest and most remarkable species of *Limax*—the *Pinna*, its shell being often found two feet long. In common with the mussel, it has the power of spinning a viscid matter from its body, in the manner of the spider and caterpillar, and of producing slender filaments, scarcely inferior in fineness and beauty to the single filament of the comparatively minute silkworm.

Several beautiful manufactures are wrought with these threads at Palermo. They are in many places the chief object of the fishery, and the silk is found to be excellent. The produce of a considerable number of pinnae is required

to make only one pair of stockings. The delicacy of this singular thread is such that a pair of stockings made of it can be easily contained in a snuff-box of ordinary size. Stockings and gloves of this production, however thin, are too warm for common wear, but are esteemed useful in gouty and rheumatic cases. This great warmth of the byssus, like the similar quality in silk, results probably from both being imperfect conductors of heat as well as electricity.

At the close of the thirteenth century, the celebrated traveller Marco Polo gave to the world a narrative of his wanderings, wherein is contained a particular and interesting account of Cambalu, the royal city of China. In evidence of the abundance of silk in which it traded,—“No fewer,” he informs us, “than 1,000 carriages and pack-horses, loaded with raw silk, make their daily entry into the city; and silks of various textures are manufactured to an immense extent.” He describes the whole country of China to be filled with great, rich, and crowded cities, thronged with manufacturers of silk and other valuable merchandise.

The climate of Bermuda is so congenial to the nature of silkworms, and the mulberry-trees so fertile, I know of no reason why a large quantity of silk should not be produced.

It may not be uninteresting to the general reader to call attention to the examination of the various transformations of the silkworm, or Bombyx, and to the study of its nature and habits.

Silkworms proceed from eggs, which are deposited during the summer by a greyish kind of moth, of the genus *Phalœna*. These eggs are about equal in size to a

grain of mustard-seed ; their colour when first laid is yellow, but in three or four days after they acquire a bluish cast.

The whole of the curious changes and labours which accompany and characterize the life of the silkworm are performed within the space of a very few weeks.

The three successive states of being put on by this insect are,—that of the worm, or caterpillar; that of the chrysalis, or aurelia; and that of the moth. In addition to these more decided transformations, the progress of the silkworm in its caterpillar state is marked by five distinct stages of being.

When first hatched, it appears as a small black worm about a quarter of an inch in length. Its first indication of animation, is the desire which it evinces for obtaining food ; in search of which, if not immediately supplied, it will exhibit more power of locomotion than characterizes it at any other period.

In about eight days from its being hatched, its head becomes perceptibly larger, and the worm is attacked by its first sickness. This lasts for three days, during which time it refuses food, and remains motionless in a kind of lethargy. At the end of the third day from its first refusal of food, the animal appears, on that account, much wasted in its bodily frame, a circumstance which materially assists in the painful operation of casting its skin. This it very soon proceeds to accomplish.

This moulting is so complete, that not only is the whole covering of the body cast off, but that of the feet, of the entire skull, and even the jaws, including the teeth.

In two or three minutes from the beginning of its efforts, the worm is wholly freed, and again puts on the

appearance of health and vigour, feeding with recruited appetite upon its leafy banquet.

Every fifth day it is attacked with sickness, and undergoes four successive moultings; at the end of its fourth sickness, it casts its skin for the last time in the caterpillar state. The worm is now about one and a half or two inches long. This last change completed, the silkworm devours its food most voraciously, and increases rapidly in size during ten days. The silkworm has now attained to its full growth, and is a slender caterpillar from two and a half to three inches in length.

At the period above mentioned, the desire of the worm for food begins to abate. The first symptom of this is the appearance of the leaves nibbled into minute portions and wasted.

The substance of which the silk is composed is secreted in the form of a fine yellow transparent gum in two separate vessels of slender dimensions, which are wound, as it were, on two spindles in the stomach. If unfolded, these vessels would be about ten inches in length.

When the worm has fixed upon some angle, or hollow place, whose dimensions agree with the size of its intended silken ball or cocoon, it begins its labour by spinning thin and irregular threads, which are intended to support its future dwelling. During the first day, the insect forms upon these a loose structure of an oval shape, which is called floss-silk, and within which covering, in the three following days, it forms the firm and consistent yellow ball. At the end of the third or fourth day, the worm will have completed its task, and formed its cocoon. When the insect has finished its labour of spinning, it smears the entire internal surface of the cocoon with a

peculiar kind of gum, very similar in its nature to the matter which forms the silk itself. When the formation of the ball is finished, the insect rests awhile from its toil, and then throws off its caterpillar garb. If the cocoon be now opened, its inhabitant will appear in the form of a chrysalis or aurelia, in shape somewhat resembling a kidney-bean, but pointed at one end, having a smooth brown skin.

The weight and length of reeled silk that can be obtained from each cocoon are very variously stated by different authors. Miss Rhodes, of Yorkshire, found that one of her largest cocoons measured 404 yards. Pullein considers the average to be 300 yards.

The attendance required for the care of silkworms does not wholly occupy the time of those employed, and it is, therefore, difficult to ascertain its amount with correctness. Pullein states, that for rearing the worms produced from six ounces of eggs, two attendants are necessary until the fourth age; and that after this period five or six persons are required.

From these data, it is found that to obtain one pound of reeled silk, it requires twelve pounds of cocoons; that rather more than 2,800 worms are employed in forming these cocoons; and that to feed these during their caterpillar state, 152 pounds of mulberry leaves must be gathered.

This pound of reeled silk is capable of being converted into sixteen yards of *gros de Naples*, of ordinary quality, or into fourteen yards of the best description.

Experience has shown that some regulation of temperature is necessary in producing the moths from the cocoons. If the heat in which these are placed be above

73 degrees, their transition would be too rapid, and their productiveness would be lessened. On the other hand, if the temperature be below 66 degrees, the development of the moths is tardy, and their produce equally falls below the due proportion.

The moths should begin to issue from the cocoons in about fifteen days. The female deposits her eggs upon sheets of paper, or strips of linen, which are then hung in a cool situation, and when dry are preserved in an airy place, and securely shielded from damp and vermin, that premature hatching may be avoided in the winter months.

Some fair specimens of cocoons were shown me a short time since by an Englishman, who spoke very sanguinely of what might be done in Bermuda with the silkworm.

THE END.

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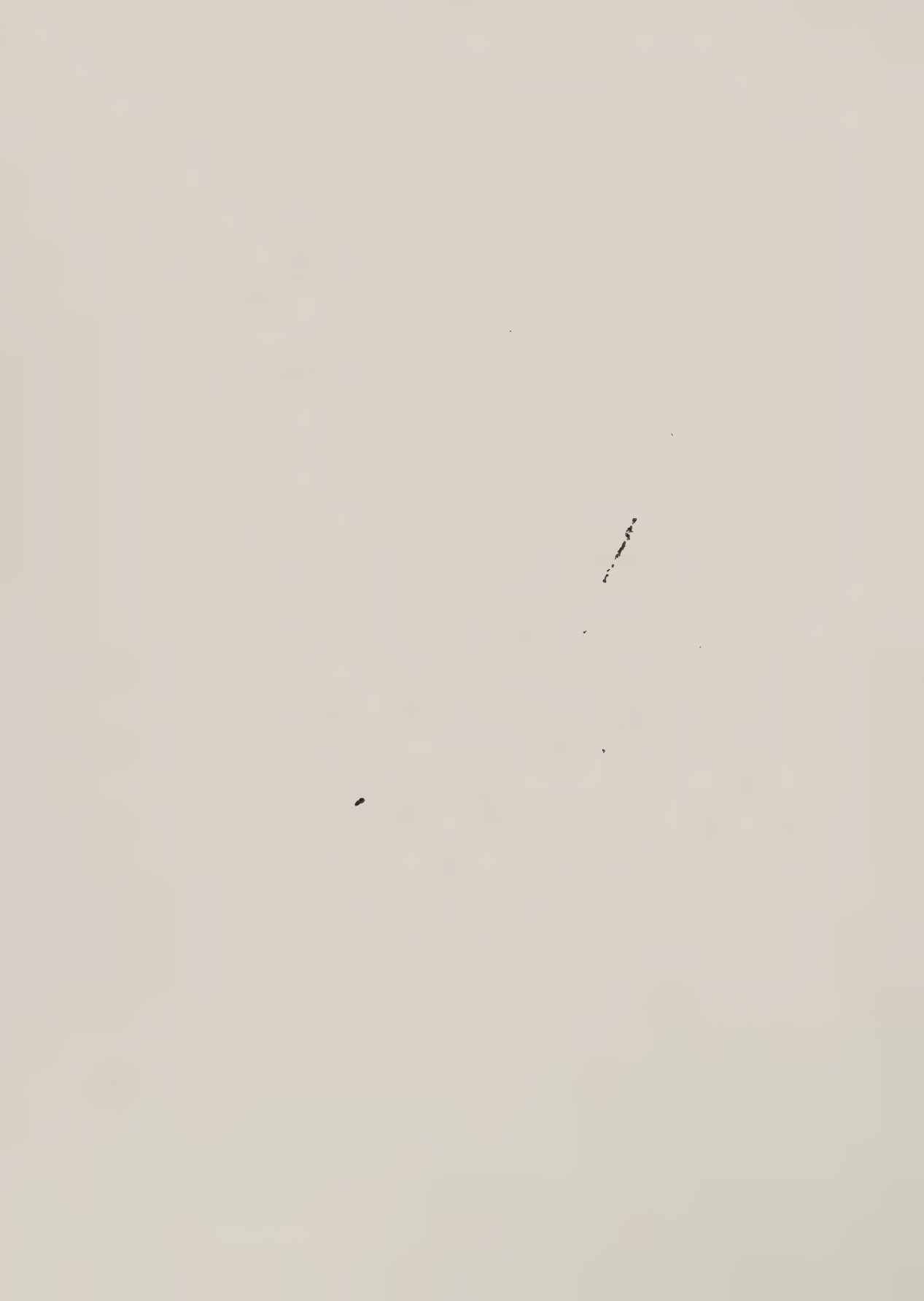
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